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May 2010

DEFENSE INVENTORY

Defense Logistics Agency Needs to Expand on Efforts to More Effectively Manage Spare Parts

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May 2010

DEFENSE INVENTORY

Defense Logistics Agency Needs to Expand on Efforts to More Effectively Manage Spare Parts

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Highlights

Highlights of GAO-10-469, a report to congressional requesters

Why GAO Did This Study

The Defense Logistics Agency (DLA) procures and manages large supplies of spare parts to keep military equipment ready and operating. At a time when U.S. military forces and equipment are in high demand and the nation faces long-term fiscal challenges, it is critical that DLA ensure that the warfighter is supplied with the right items at the right time and exercise good stewardship over the billions of dollars invested in its inventories. GAO has identified supply chain management as a high-risk area due in part to high levels of inventory beyond what is needed to support requirements and problems in accurately forecasting demand for spare parts. GAO's objectives were to (1) determine the extent to which DLA's inventory of spare parts reflects the amount needed to support requirements; and (2) identify causes, if applicable, for DLA's having spare parts inventory that does not align with requirements. GAO analyzed DLA inventory data for fiscal years 2006 through 2008.

What GAO Recommends

GAO is making recommendations on the seven factors contributing to mismatches between inventory levels of spare parts and requirements. Among other things, DLA should develop an action plan for addressing demand planning issues, and DOD should work with DLA to define goals and metrics for assessing and tracking the cost-efficiency of inventory management. DOD concurred with GAO's recommendations.

View GAO-10-469 or key components.
For more information, contact Jack Edwards at (202) 512-8246.

What GAO Found

GAO's review showed that DLA can enhance its efforts to manage spare parts more effectively primarily by focusing on the front end of the process when decisions are being made on what items to buy and how many in response to requirements. GAO's analysis of DLA data showed the agency had significantly more spare parts secondary inventory than was needed to meet current requirements in fiscal years 2006 through 2008. Current requirements include all the requirements used by DLA to determine when to order new parts, which Department of Defense (DOD) guidance refers to as the "requirements objective." The average annual value of the inventory for the 3 years reviewed was about $13.7 billion. Of this total, about $7.1 billion (52 percent) was beyond the amount needed to meet the requirements objective, and about $5.1 billion (37 percent) was not needed to meet the requirements objective plus 2 years of estimated future demand. Of the $5.1 billion, DLA had an average of $4.1 billion in retention stock (materiel for possible contingencies or materiel deemed to be more economical to keep than to dispose of) and had identified $1 billion as potential excess (for reutilization or disposal).

Although DOD policy requires that DLA minimize investment in inventory while also meeting requirements, at least seven factors are continuing to cause DLA to order and stock parts that do not align with requirements. Three factors relate to how many parts to buy: inaccurate demand forecasting for parts, unresolved problems with accurately estimating lead times needed to acquire spare parts, and challenges in meeting the military services' special requests to DLA for future spare parts support for weapon systems. Three more factors relate to DLA initiatives that, while showing promise for reducing the acquisition and retention of parts not needed to meet requirements, do not appear to be achieving their full potential: closing gaps in providing accurate, timely data to inventory managers as input into purchase decisions; modifying or canceling planned purchases that may no longer be needed to meet currently estimated requirements; and reducing contingency retention stock that may no longer be needed. Lastly, DLA is not tracking the overall cost efficiency of its inventory management. Although DLA has recognized and begun to address many of these factors, its current efforts may not be fully effective at reducing the significant mismatches GAO identified between spare parts inventory levels and requirements. Acquiring inventory for which demand is much lower than expected reduces the amount of funding available for other military needs.

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United States Government Accountability Office
Washington, DC 20548

May 11, 2010

The Honorable Solomon P. Ortiz
Chairman
The Honorable J. Randy Forbes
Ranking Member
Subcommittee on Readiness
Committee on Armed Services
House of Representatives

The Honorable Bernard Sanders
United States Senate

The Defense Logistics Agency (DLA) and the military services procure and manage large supplies of spare parts to keep military equipment ready and operating. As of September 30, 2008, the Department of Defense (DOD) reported that the total value of its secondary inventory, including spare parts and other items, was about $94 billion.[1] At a time when U.S. military forces and equipment are in high demand and the nation and military face long-term fiscal challenges, it is critical that DLA and the services work toward ensuring both that the warfighter is supplied with the right items at the right time and that good stewardship is demonstrated over the billions of dollars invested in their inventories.

Since 1990, we have identified DOD supply chain management as a high-risk area due in part to ineffective and inefficient inventory management practices and procedures, problems with accurately forecasting demand for spare parts, and high levels of inventory beyond what is needed to support requirements. These high levels of inventory have included both on-hand and on-order inventory. Inventory that is in DOD's possession is considered to be on hand. Inventory that is not in DOD's possession but for which a contract has been awarded or funds have been obligated is considered to be on order. Whereas the military services focus on managing reparable spare parts, DLA primarily focuses on managing consumable parts, which are normally expended or intended to be used up beyond recovery. Additionally, Section 328 of the National Defense

[1]DOD defines secondary inventory items to include reparable components, subsystems, and assemblies other than major end items (e.g., ships, aircraft, and helicopters), consumable repair parts, bulk items and materiel, subsistence, and expendable end items (e.g., clothing and other personal gear).

Authorization Act for Fiscal Year 2010 requires the Secretary of Defense to submit a comprehensive plan to improve the inventory management system of the military departments and DLA, with the objective of reducing the acquisition and storage of secondary inventory excess to requirements.[2]

In response to your request that we review DOD's management of its secondary inventory, this report addresses DLA's management of the spare parts that it purchases, stores, and delivers to its military service customers, including parts for aviation, maritime, and land systems. Our specific objectives were to (1) determine the extent to which DLA's inventory of spare parts reflects the amount needed to support requirements; and (2) identify causes, if applicable, for DLA's having spare parts inventory that does not align with requirements. We previously reported on the management of the Army's, the Navy's, and the Air Force's spare parts inventories (see Related GAO Reports section at the end of this report).

To determine the extent to which DLA's spare parts inventory reflects the amount of inventory needed to support requirements, we analyzed fiscal year 2006 through 2008 stratification data, including summary reports and item-specific data as of September 30 for each fiscal year.[3] These data were the most recent available for our analysis. After assessing DLA's data, we determined that the data were sufficiently reliable for the purposes of our analysis and findings, as discussed in appendix I in more detail. We determined the total number of items that had more than or less than enough inventory to satisfy requirements, as identified by DOD, and for each of these items also determined the number and value of parts that were more than or less than what was needed to satisfy requirements. In presenting the value of inventory in this report, we converted then-year

[2]Pub. L. No. 111-84, § 328 (2009). Section 328(d) states that for the purposes of section 328, the term "inventory that is excess to requirements" means inventory that is excess to the approved acquisition objective and is not needed for the purposes of economic retention or contingency retention.

[3]Section C9.2.2.3.2. of DOD Regulation 4140.1-R, *Supply Chain Materiel Management Regulation* (May 23, 2003) requires each service and DLA to report secondary inventory data annually as of September 30, no later than February 1, and requires that report to have a narrative that describes significant trends, changes from previous reporting periods, and modifications to systems, procedures, or operations impacting on the reported value of materiel. Secondary inventory data are stratified by item, each of which is assigned a unique stock number. DLA may have in its inventory multiple quantities (parts) of each unique item.

dollars to constant fiscal year 2008 dollars using DOD operations and maintenance price deflators.[4]

It is important to note that our analysis reflects points in time over the 3-year period we reviewed and that requirements and inventory levels are constantly shifting. DOD and DLA officials noted that when military operations are ongoing, requirements from customers are particularly volatile and less defined. They further stated that effective, timely supply support to the warfighter is of paramount interest and that efforts to measure the cost-efficiency of DLA's investment in inventory should take the current and recent wartime environment into consideration, as well as the agency's success at meeting customer demands. The scope of our review did not include an analysis of DLA's effectiveness at meeting customer demands.

In this report, we characterize inventory as beyond current requirements when existing inventory levels are greater than what DOD calls its "requirements objective," defined as follows: "For wholesale stock replenishment, the maximum authorized quantity of stock for an item. It consists of the sum of stock represented by the economic order quantity, the safety level, the repair-cycle level, and the authorized additive levels."[5] We used the requirements objective as a criterion level because, according to DOD Regulation 4140.1-R, it establishes the target quantity for replenishing an item's level of stock through procurement. In other words, if DLA had enough parts to meet the requirements objective, it would not typically purchase new parts. The requirements objective is reflected in DLA stratification reports as material needed to meet various operating requirements (comprised of low demand items, war reserves, back orders, and safety levels), the time required to acquire parts (known as acquisition lead time), and an economic order quantity that may be added to these requirements. The categories DOD and DLA use to characterize and manage inventory are discussed further in the Background section of this report.

DOD officials stated that our focus on current requirements (that is, the requirements objective) does not fully portray the department's total

[4]DOD Comptroller, *National Defense Budget Estimates for FY 2009* (March 2008), p. 47.

[5]According to DOD Regulation 4140.1-R, § C2.6.3.2.3 (May 23, 2003), authorized additive levels include nondemand-based requirements, such as stock for wartime reserve and planned program requirements.

requirements for spare parts, which includes parts held for potential demands that have not yet materialized. To address this concern, in this report, we also identify inventory levels that are needed to meet what DOD calls its "approved acquisition objective," defined as follows: "The quantity of an item authorized for peacetime and wartime requirements to equip and sustain U.S. and Allied Forces, according to current DOD policies and plans."[6] DLA includes materiel needed to meet the requirements objective plus 2 years of estimated future demand in the approved acquisition objective. According to DOD officials, while spare parts acquisitions are managed based on the requirements objective, the approved acquisition objective is their preferred criterion for measuring inventory levels since it allows DLA and the services to stock items for the future, thus helping them to ensure sufficient inventory will be available for customers when needed. According to DLA, both the requirements objective and the approved acquisition objective exclude "inactive" inventory, which consists of economic and contingency retention stocks and parts that DLA has identified for potential disposal or reutilization.

We use the term "inventory deficit" to describe items that have an amount of on-hand inventory that falls below the operating requirements. We used this criterion level because it reflects DLA's ability to respond to an immediate demand for a spare part. According to DOD and DLA officials, they would not consider inventory to be in a true deficit position if new parts are on order. Consequently, in our report we also present analysis of the extent that on-order inventory would cover the on-hand deficits we identified.

To identify causes for DLA's having inventory that does not align with requirements, we selected a nonprobability sample of 90 inventory items for which DLA inventory data indicated a mismatch between inventory levels and requirements. We used March 2009 stratification data to identify these items because these were the most recent data available when we selected our cases. We met with DLA inventory managers responsible for managing these items to obtain information on factors that contributed to the apparent mismatch between inventory levels and requirements. Because we used a nonprobability sample, our results cannot be projected to items outside our sample. We also interviewed DLA headquarters officials and other agency personnel to obtain information about DLA's inventory management policies and practices, inventory improvement

[6]DOD Regulation 4140.1-R, § AP1.1.4 (May 23, 2003).

initiatives, and other activities related to managing spare parts. Appendix I provides further information on our scope and methodology, including our methodology for analyzing DLA stratification data and selecting sample items for review.

We conducted this performance audit from February 2009 through May 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

DLA had significantly more spare parts secondary inventory than was needed to meet current requirements in fiscal years 2006 through 2008, and it also experienced some inventory deficits, though to a far lesser extent. Our analysis indicated that the average annual value of DLA's spare parts inventory for the 3 years was about $13.7 billion. Of this total, about $7.1 billion (52 percent) was beyond the amount needed to meet its requirements objective, and this inventory represented 1.4 billion (55 percent) of the 2.5 billion parts that DLA held on average for each of the 3 years. In addition, the analysis showed that about $5.1 billion (37 percent) of DLA's total inventory was not needed to meet its approved acquisition objective—the requirements objective plus 2 years of estimated future demand. Of the $5.1 billion, DLA had an average of $4.1 billion in retention stock (materiel for possible contingencies or materiel deemed to be more economical to keep than to dispose of) and had identified $1 billion as potential excess (for reutilization or disposal). In addition, applying DLA forecasts of future demand for those items where our analysis indicated quantities were beyond the requirements objective, we found that the inventory levels of some items were sufficient to meet over 10 years of demand, or had no projected demand, although the value of this inventory had decreased from fiscal year 2006 to fiscal year 2008. Finally, on the basis of our analysis, we also found that DLA had inventory deficits—where on-hand inventory levels were below operating requirements—with an estimated value of $1.5 billion on average each year during the 3 years we reviewed. Of this total, about $712 million (47 percent) had sufficient inventory on order to meet the on-hand deficits we identified.

Despite some positive actions by DLA to decrease its inventory of spare parts that have limited or no future demand, at least seven factors

continue to cause DLA to order and stock parts that do not align with requirements. These seven factors overlap with one another but can be grouped into three major categories.

First, DLA faces challenges in determining how many parts to buy for its customers:

- DLA faces challenges due to inaccurate demand forecasting for the parts it manages. DOD's supply chain regulation states that customer demand shall be part of all DOD components' inventory management decisions; that components shall not stock an item that does not have any possibility of future demand; and that variance in demand forecasts outside established parameters should be flagged for management analysis and action.[7] DLA has identified problems with demand planning and begun to address some of these issues, but it has not articulated specific goals, objectives, resources, or time frames for completing this effort. Without an action plan articulating these specific elements, DLA may have difficulty sustaining and expanding upon its current efforts.

- DLA has not resolved problems with accurately estimating suppliers' lead times needed to acquire spare parts, which can lead to a mismatch between inventory levels and requirements if parts are delivered before or after they are needed. We identified problems with DLA overstating lead times in a prior report and found instances within our sample of cases in this review where fewer parts might have been procured if lead time estimates had been more accurate. DLA officials noted that they had already made some changes since 2008 to better estimate administrative lead time, but the agency had not yet determined the root causes for inaccurate production lead time estimates.

- DLA faces challenges in meeting the military services' estimated additional requirements for spare parts identified in supply support requests and special program requirements. These two processes provide a means by which the services submit requirements to DLA when they first anticipate that they will need DLA to supply future spare parts. The services have tended to overestimate their additional requirements, which may result in DLA's holding inventory beyond what is needed to meet requirements. DLA's internal controls for evaluating and adjusting purchases in response to these requirements have not always operated effectively. Also, DLA officials noted that the services lack a financial incentive for minimizing

[7]DOD Regulation 4140.1-R, § C2.5.1.1 and C2.5.1.6 (May 23, 2003).

their supply support requests because they will not purchase the parts from DLA using their own funds until the parts are needed. The feasibility of requiring up-front military service funding for spare parts supply support requests has not been evaluated.

Second, DLA has some initiatives under way to address known problem areas, and preliminary results from these initiatives show promise for reducing the acquisition and retention of spare parts that are not needed to meet current requirements. However, their implementations appear to fall short of achieving their full potential:

- DLA has an initiative to improve the exchange of demand data that inventory managers receive from customers to make purchase decisions, and sound supply chain management principles emphasize the need for effective communication internally within the organization and externally among all stakeholders in the supply chain. However, we found a number of instances during our review where inventory managers did not consistently have accurate, timely data to make fully informed purchase decisions. DLA's current demand data exchange initiative has been established with a limited number of customers and items. DLA has not conducted a program evaluation or made clear to what extent it plans to expand this initiative to more customers and items.

- While DLA has an "over-procurement" process for identifying, and then modifying or canceling, planned purchases of spare parts that may no longer be needed to meet currently estimated requirements, several factors have limited its implementation and associated cost reductions. These factors include, for example, requirements thresholds established for identifying potential over-procurements and the exclusion of special programs from being evaluated under this process. DLA has not evaluated the overall effectiveness of its over-procurement process and the feasibility of applying it on a wider scale.

- DLA has reported progress in an initiative aimed at reducing the proportion of its secondary inventory that is inactive, but continues to have large amounts of contingency retention stock. While some of this contingency retention stock may no longer be needed, the services have not provided input that DLA needs in order to make these determinations.

Third, DLA does not assess and track the cost efficiency of its inventory management. Although DOD's supply chain regulation directs the military components to size secondary item inventories to minimize DOD's investment while providing the inventory needed, DLA lacks goals and associated metrics that would enable it to determine the extent to which it

is meeting this requirement. DLA has metrics aimed at measuring the extent to which the agency is able to satisfy customer requisitions and other aspects of its performance, but it lacks cost-efficiency metrics. The lack of cost-efficiency metrics limits DLA's ability to track and evaluate outcomes of its inventory management improvement efforts over the long term.

Although DLA has recognized and begun to address many of the factors we identified as contributing to mismatches between inventory levels and requirements, our review shows that DLA's current efforts may not be fully effective at providing assurance that the agency is minimizing DOD's investment in unneeded secondary inventory. In the absence of additional actions to improve inventory management, DLA will likely continue to purchase and retain items that its customers do not need and then spend additional resources to handle and store these items. Acquiring inventory for which demand is much lower than expected reduces the amount of funding available for other military needs.

To improve the management of DLA secondary inventory, we are making recommendations regarding each of the seven factors we identified as contributing to mismatches between inventory levels of spare parts and requirements. DLA officials stated that addressing some of the factors we identified requires a collaborative approach among DLA; the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics; and the military services. We took these comments into account in making our recommendations. DOD, in its comments on a draft of this report, concurred with our recommendations and identified corrective actions to be completed. The corrective actions were generally responsive to our recommendations.

Background

Under DOD's supply chain materiel management policy, secondary item inventory is to be sized to minimize DOD's investment while providing the inventory needed to support both wartime and peacetime requirements.[8] Management and oversight of DLA inventory is a responsibility shared between the Under Secretary of Defense for Acquisition, Technology and Logistics and the Director, DLA. The Under Secretary of Defense for

[8]DOD Directive 4140.1, *Supply Chain Materiel Management Policy* (April 2004), establishes policy and responsibilities for materiel management. DOD Regulation 4140.1-R implements this directive.

Acquisition, Technology and Logistics is responsible for developing materiel management policies and ensuring their implementation in a uniform manner throughout the department, while the Director, DLA, is responsible for implementing DOD policies and procedures for the assets DLA manages. DLA provides support in the areas of subsistence, medical, construction and equipment, clothing and textile, and fuel, as well as aviation, land, and maritime spare parts. Aviation items are managed at DLA's office in Richmond, Virginia; maritime and land items are managed at DLA's office in Columbus, Ohio. Inventory managers at these locations are assigned to manage individual items. DLA has developed guidance and procedural instructions for computing requirements for its secondary inventory.

DLA Has Made Changes to Its Business Practices and Information Systems

In fiscal year 2006, DLA issued its plan to transform how it does business in order to improve warfighter support and reduce costs through business process reengineering, workforce development, technology modernization, and organizational change.[9] The plan notes that DLA altered its business model, redefined its supporting processes, and introduced new information systems architecture. DLA also undertook initiatives in customer relationship management, supplier management relations, and business systems modernization, which involved a major information technology reengineering effort. DLA replaced its legacy materiel management information systems with a new enterprise resource planning system—called the Enterprise Business System—using commercial-off-the-shelf software applications. The transition to the Enterprise Business System took 6 years and achieved full operating capability in July 2007. DLA continues to enhance the system and resolve identified problems.

Another major change at DLA involved a reorganization of its inventory management personnel. Before DLA's reorganization, item managers were the sole points of contact for handling orders and the distribution of items assigned to them. As part of the reorganization, DLA made a major shift, dividing this responsibility and establishing two main facets of planning: demand planning and supply planning. Demand planners gather data, determine how the demand plan will be created, generate the plan, and provide the plan to others in the organization. In contrast, supply planners use the demand plan to determine how best to meet the customers'

[9]DLA, *Transformation Roadmap, Fiscal Year 2006*.

expected demands and generate supply plans. Within DLA, the demand and supply planning functions also require input from weapon systems managers, customer account specialists, and procurement officials.

In addition to these changes DLA has made, decisions made as part of the Base Realignment and Closure (BRAC) process in 2005 were aimed at achieving economies and efficiencies related to supply and storage of secondary inventory. Specifically, the military services were directed to (1) realign or relocate management and related support functions for the procurement of depot-level reparables to DLA; (2) relocate consumable item management to DLA to consolidate missions and reduce excess capacity; and (3) transfer supply contracting functions for tires, packaged petroleum products, and compressed gases to DLA, and privatize all other supply, storage, and distribution functions for these commodities. DOD is in the process of implementing the BRAC 2005 actions, which are required to be completed by September 15, 2011. We have recently reported on the progress made and challenges DLA still faces to consolidate supply-related functions at 13 depot locations.[10]

Value of Secondary Inventory Has Varied in Recent Years

DOD reported that the total value of its secondary inventory decreased from fiscal years 2006 to 2007 before increasing to $94.1 billion as of September 30, 2008. DOD stratification reports show that the value of DLA's secondary inventory—which includes spare parts and other commodities managed by the agency—followed a similar pattern, decreasing by $1.1 billion from fiscal years 2006 to 2007 and then increasing by $4.8 billion in fiscal year 2008 (see table 1). According to DLA, most of this increase was caused by higher fuel costs. The value of DLA secondary inventory as a percentage of the DOD total remained steady at 19 percent in fiscal years 2006 and 2007 before rising to 22 percent in fiscal year 2008.

[10]GAO, *Military Base Realignments and Closures: DOD Needs to Update Savings Estimates and Continue to Address Challenges in Consolidating Supply-Related Functions at Depot Maintenance Locations*, GAO-09-703 (Washington, D.C.: July 9, 2009).

Table 1: Value of DOD's and DLA's Secondary Inventory (Fiscal Years 2006-2008)

Dollars in billions			
Fiscal year	DOD secondary inventory	DLA secondary inventory	Percentage of DOD secondary inventory held by DLA
2006	$89.3	$17.0	19
2007	84.2	15.9	19
2008	94.1	20.7	22

Source: GAO analysis of DOD data.

Notes: Values are expressed in constant fiscal year 2008 dollars. DOD values inventory at latest acquisition cost, with reductions for reparable inventory in need of repair and salvage prices for potential reutilization/disposal stock.

DLA's Process for Determining Needed Amount of Secondary Inventory

DLA determines requirements by calculating the amount of wholesale inventory it needs to either have in storage (on hand) or purchase (on order). According to DLA officials, the agency identifies in its stratification reporting the amount of inventory allocated to meet its requirements objective, which includes various operating requirements and acquisition lead time, as well as a calculated economic order quantity that may be added to these requirements. Operating requirements include low demand items and war reserves, back orders, and safety levels. Low demand items are requirements for parts for which demand cannot be forecast but nevertheless need to be stocked. War reserves include mission-essential secondary items sufficient to attain and sustain authorized operational objectives. Back orders are customer-requisitioned materiel that is not immediately available to issue, but is recorded as a commitment for future issue. Safety levels are stock that is to be kept on hand in case of minor interruptions in the resupply process or unpredictable fluctuations in demand. Acquisition lead time includes both administrative and production lead time requirements. Administrative lead time requirements refer to inventory reserves sufficient to satisfy demand from the time that the need for replenishment of an item is identified to the time when a contract is awarded for its purchase or an order is placed. Production lead time requirements refer to inventory purchases sufficient to satisfy demand from the time when a contract is let or an order is placed for inventory to the time when the item is received.

When on-hand and on-order inventory levels drop to a threshold level—called the reorder point—the supply manager may place an order for additional inventory of that item. The reorder point factors in demand for an inventory item during the reordering period so that DLA can replace it

before it goes out of stock, and a safety level to ensure a supply of stock during interruptions in production or repair.[11] An economic order quantity—the amount of inventory that will result in the lowest total costs for ordering and holding inventory—is automatically calculated by a computer program and is added to the order, if applicable. A purchase request or purchase order may be terminated or modified if requirements change.[12]

On-hand and on-order parts that are not needed to meet DLA's requirements objective may include some inventory that satisfies 2 years of estimated future demand. As noted earlier, the approved acquisition objective incorporates both materiel needed to meet the requirements objective and materiel needed to meet 2 years of estimated future demand. Materiel that is on hand or on order that exceeds the approved acquisition objective is referred to as inactive inventory.[13] Inactive inventory includes economic retention stock, which is materiel that has been deemed more economical to keep than to discard because it is likely to be needed in the future; contingency retention stock, which is material retained for specific contingencies; and potential excess materiel,[14] which has been identified for possible disposal but has potential for reutilization. Figure 1 summarizes how DOD inventory categories are aggregated in the context of DLA stratification reporting.

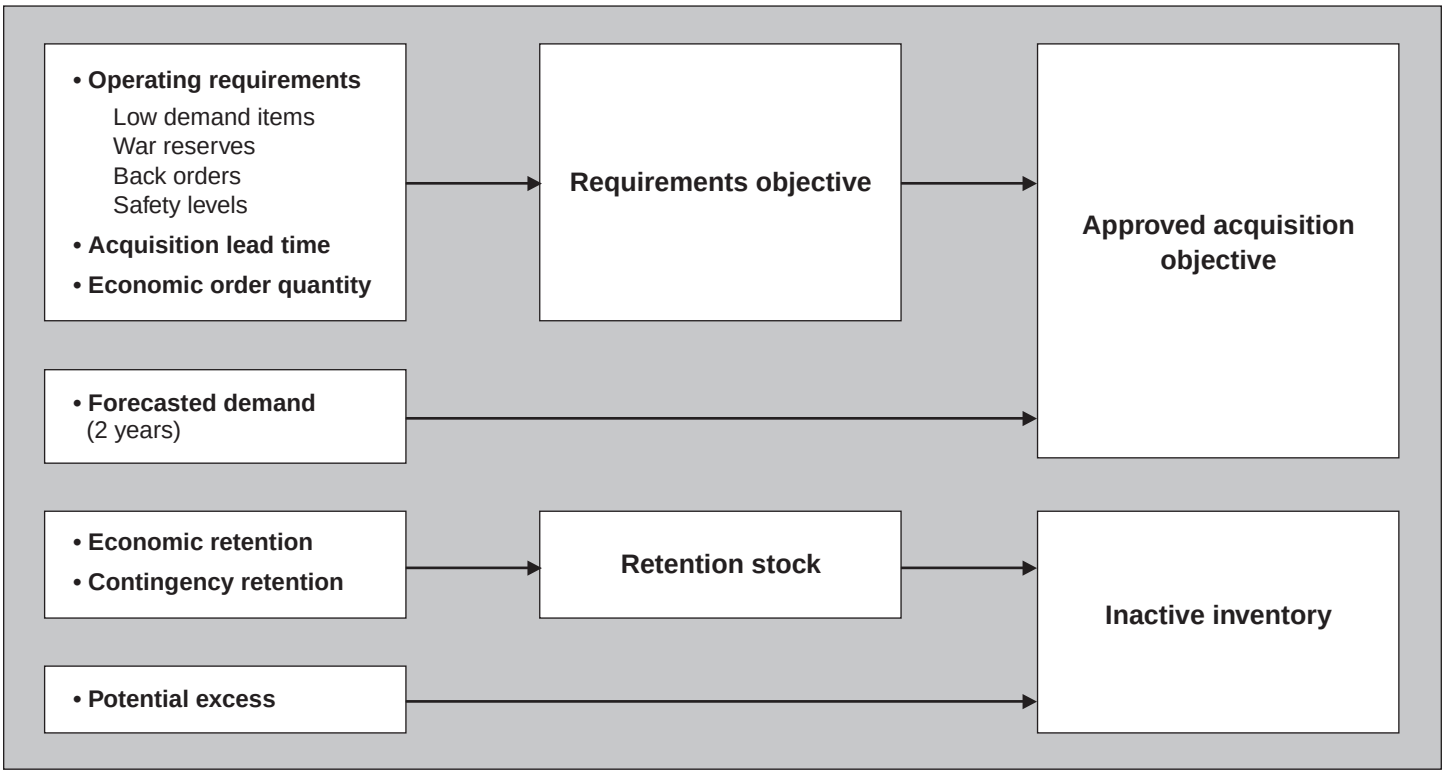
[11]The reorder point also typically includes a repair-cycle level (for repairable items) and authorized additive levels (e.g., war reserves), but DLA does not include those levels in its reorder point calculus.

[12]A purchase request is a requisition for an item that has not yet been placed on order. A purchase order refers to inventory that has been purchased but not yet delivered to DLA's possession.

[13]Defense Logistics Agency Memorandum, *Improving DLA Inventory Management and Performance* (July 25, 2008).

[14]DLA uses the term "potential excess" to describe materiel that DOD Regulation 4140.1-R categorizes as "potential reutilization and/or disposal materiel." Potential reutilization and/or disposal materiel is defined as materiel identified by an item manager for possible disposal, but with potential for reutilization.

Figure 1: Categories of DOD Spare Parts Inventory



Source: GAO analysis of DOD policies and DLA stratification reporting.

A Significant Portion of DLA's Secondary Inventory Did Not Align with Current Requirements and Had Limited Demand

Our analysis of DLA secondary inventory data for the 3-year period we examined showed that, on average, about half (52 percent) of DLA's total inventory was not needed to meet current requirements (the requirements objective) and more than one-third (37 percent) was not needed to meet the approved acquisition objective—the requirements objective plus 2 years of estimated future demand. More than one-third of DLA's total inventory (37 percent) was inactive, comprising retention stock and material DLA had identified as potential excess (for reutilization or disposal). In addition, according to DLA's demand forecasts for items exceeding the requirements objective in fiscal years 2006 and 2008, the inventory levels of some items were sufficient to meet over 10 years of demand, or had no projected demand. We also identified on-hand inventory deficits for some items.

About $7.1 Billion, or 52 Percent, of DLA's On-Hand and On-Order Inventory Value Exceeded the Requirements Objective Each Year

Our analysis of DLA secondary inventory data showed that, for the 3 fiscal years 2006 through 2008, an average of about $6.5 billion (48 percent) of the total annual inventory value was needed to meet the requirements objective, whereas $7.1 billion (52 percent) was not needed for these requirements. Measured by total number of parts, 45 percent applied to the requirements objective on average each year, and the remaining 55 percent did not apply to these requirements. Our analysis revealed that DLA managed an average of about 1.7 million unique items each year, and many of these had more parts than were needed to meet the requirements. Table 2 shows DLA's spare parts secondary inventory grouped by stratification category. DLA identified $1.0 billion on average each year as potential excess to be reviewed for possible reutilization or disposal.

Table 2: Stratification of DLA Spare Parts Secondary Inventory (Annual Average for Fiscal Years 2006-2008)

Stratification category	Parts (in billions)	Value (in billions)
Requirements objective		
Operating requirements	0.5	$2.8
Acquisition lead time	0.3	2.7
Economic order quantity	0.3	1.0
Subtotal: Requirements objective	**1.1**	**6.5**
Forecasted demand (2 years)	0.4	2.1
Subtotal: Approved acquisition objective	**1.5**	**8.6**
Inactive inventory		
Economic retention	0.3	1.5
Contingency retention	0.6	2.6
Potential excess	0.1	1.0
Subtotal: Inactive inventory	**1.0**	**5.1**
Subtotal: Forecasted demand and inactive inventory	**1.4**	**7.1**
Total inventory	**2.5**	**$13.7**

Source: GAO analysis of DLA data.

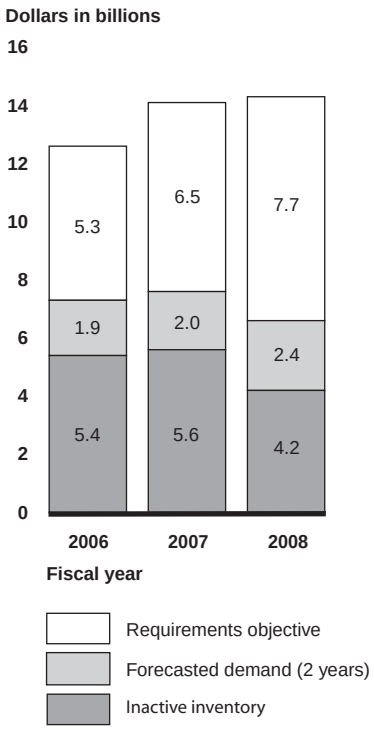
Notes: Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges). Totals may not add up due to rounding.

In table 2, the approved acquisition objective includes the requirements objective subtotal ($6.5 billion) plus the 2 years of forecasted demand ($2.1 billion). Using the approved acquisition objective as a criterion, about $8.6 billion (63 percent) of the total inventory was needed to meet these requirements, and $5.1 billion (37 percent) was not needed. In effect,

DLA had already purchased a significant amount of inventory toward its future needs. If some of these forecasted demands do not materialize, the purchased parts may become part of DLA's inactive inventory and may eventually be marked for potential reutilization or disposal.

Our data analysis also showed some variability from year to year in the balance between inventory meeting current requirements (the requirements objective) and inventory beyond those requirements (composed of both the 2-year forecasted demand and the inactive inventory). For example, both the requirements objective and the forecasted demand increased each year, whereas the inactive inventory increased from fiscal years 2006 to fiscal year 2007 and then decreased in fiscal year 2008. Figure 2 shows the data for each of the 3 years included in this review.

Figure 2: DLA's Secondary Inventory Levels for Requirements Objective, Forecasted Demand, and Inactive Inventory (Fiscal Years 2006-2008)

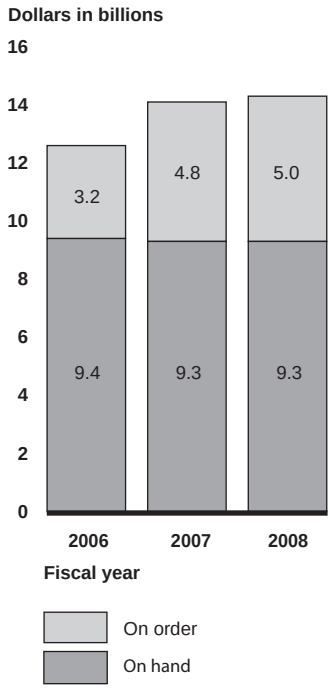


Source: GAO analysis of DLA data.

Note: Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges).

On average during the 3-year period, about 68 percent of the value of DLA's total inventory was on hand and 32 percent of the value was on order. The relative portion of DLA's on-hand and on-order inventory varied somewhat over this period, with the value of on-order inventory rising from 26 percent of the total in 2006 to 34 percent in 2008 (see fig. 3).

Figure 3: Value of DLA's Total Inventory On Hand and On Order (Fiscal Years 2006-2008)



Source: GAO analysis of DLA data.
Note: Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges).

Inventory Beyond Requirements Objective Varied by Supply Chain, and Some Items Had Many Years of Projected Demands

Much of DLA's inventory beyond the requirements objective was concentrated in the aviation supply chain. Table 3 shows the average number and value of parts beyond the requirements objective for each of the three supply chains. Additional analysis of the data on only the portion of the inventory beyond the requirements objective showed that the aviation supply chain had about three-fourths (73 percent) of DLA's total number of spare parts and more than half (61 percent) of the total value of DLA's spare parts beyond the requirements objective. In contrast, the land supply chain accounted for a relatively small percentage (6 percent) of the number of parts beyond the requirements objective, although the value of

these parts was about $900 million, or 12 percent of the value of DLA's spare parts that were beyond the requirements objective.

Table 3: Average Annual Value of Aviation, Land, and Maritime Inventory Beyond the Requirements Objective (Fiscal Years 2006-2008)

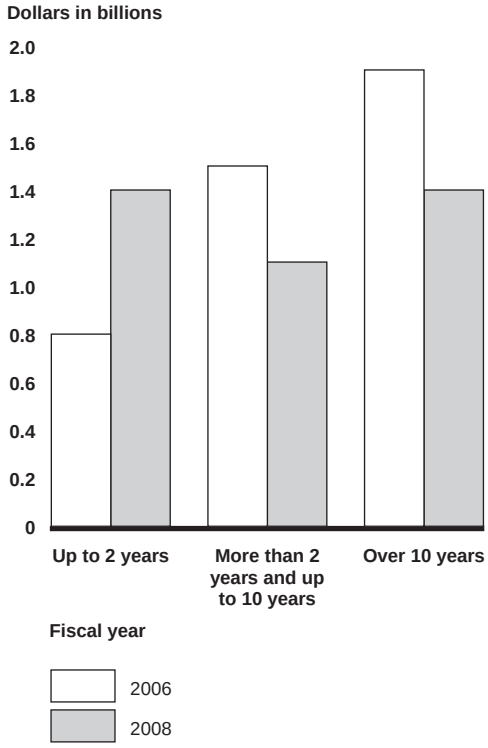
	Parts		Value	
Supply chain	Number (in millions)	Percent	Dollars (in billions)	Percent
Aviation	0.9	73	$4.3	61
Maritime	0.3	21	2.0	27
Land	0.1	6	0.9	12
Total	**1.3**	**100%**	**$7.1**	**100%**

Source: GAO analysis of DLA data.

Note: Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges). Totals may not add due to rounding.

Applying DLA forecasts of future demand for those items where our analysis indicated quantities were beyond the requirements objective, we found that some of DLA's inventory for fiscal years 2006 and 2008 was sufficient to meet over 10 years of demand. In addition, many items showed no projected demand. Figure 4 shows the values associated with the spare parts beyond the identified requirements grouped into projected years of supply.

Figure 4: Value of DLA's Inventory Beyond the Requirements Objective by Projected Years of Supply (Fiscal Years 2006 and 2008)



Source: GAO analysis of DLA data.

Notes: We identified an annual demand forecast for individual items with inventory beyond the requirements objective in the stratification reports for fiscal years 2006 and 2008. We divided inventory beyond the requirements by the annual demand forecast to obtain the number of years of supply the inventory levels would satisfy, and then multiplied the result by the fiscal year 2008 per part cost.

Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges).

As shown in figure 4, about $1.4 billion of the inventory beyond the requirements objective in fiscal year 2008 would supply up to 2 years of forecasted demand, about $1.1 billion of parts would meet more than 2 and up to 10 years of forecasted demand, and about $1.4 billion of parts would meet forecasted demand for over 10 years. A comparison of the supply data for the 2 fiscal years suggests some positive changes occurred. Specifically, the value of inventory forecasted to be used in the next 2 years was higher in 2008 than in 2006, and the value of inventory with more than 2 years of supply was lower. Similarly, our analysis further

showed that the value of inventory with no forecasted demand decreased from $2.3 billion in fiscal year 2006 to $1.6 billion in fiscal year 2008.

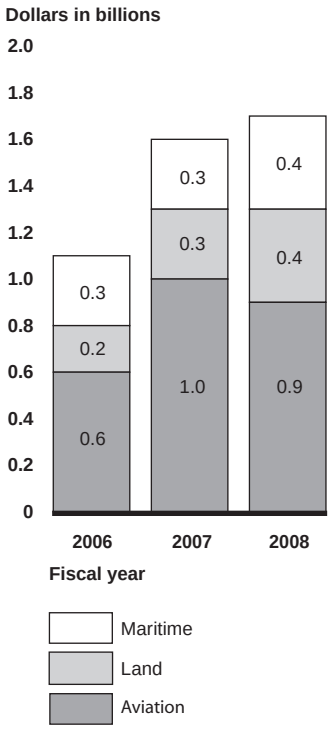
Other information provided by DLA supply distribution centers also indicated that the agency had large amounts of on-hand inventory as of September 2008 for which there was little to no demand. Specifically, this information showed that DLA held parts valued at about $3.2 billion that had no demand in the past 2 or more years. (The value of these parts was calculated based on the cost that would be charged to customers and thus differed from the cost data associated with the stratification reports that we used for our analysis.) Of this total, parts valued at about $1 billion had no demands for at least the past 8 years. DLA estimated it incurred about $2.5 million in costs for storing these items with 8 years or more of no demand. At a DLA warehouse we visited, we saw some of these items on the shelves, including 3 packaged circuit boards with a total value of $730,140, 15 cable assembly parts valued at $59,086, and 74 contact assembly boards with a value of $26,270. In each case, DLA has had no demand for the items in 8 or more years.

On-Hand Inventory Deficits Were Identified for Some Items

DLA had on-hand inventory deficits for some items—that is, DLA had an insufficient level of on-hand inventory to meet operating requirements.[15] For fiscal years 2006 through 2008, DLA had on-hand inventory levels below operating requirements for an average of about 166,000 items worth an estimated $1.5 billion. DLA experienced more on-hand inventory deficits for aviation items than for maritime and land items each year. Figure 5 shows the estimated value of DLA's on-hand inventory deficits, by supply chain, for each of the fiscal years included in our review.

[15]This analysis excluded acquisition lead time and economic order quantity requirements.

Figure 5: Estimated Value of On-Hand Inventory Deficits Against Operating Requirements by Supply Chain (Fiscal Years 2006-2008)



Source: GAO analysis of DLA data.

Note: Values are expressed in constant fiscal year 2008 dollars and do not include cost recovery rates (overhead charges).

DOD and DLA officials said they would not consider inventory to be in a true deficit position if inventory levels have reached the reorder point and new parts are on order. They noted that inventory managers typically will place an order for new parts when an item's inventory falls to the reorder level. We subsequently analyzed the fiscal year 2006 to 2008 data and determined that, on average, about 44,000 (27 percent) of the items with an estimated value of about $712 million (47 percent) had sufficient inventory on order to meet the on-hand deficits we identified.[16] DLA inventory managers told us that deficits occur and can persist for various reasons, including when there is an unexpected surge in requirements for parts or when a supplier is no longer in business or producing the needed

[16]This analysis of on-order inventory included purchase orders but not purchase requests.

part and a new, qualified supplier must be found. We could not determine the criticality of the on-hand inventory deficits we identified because this information is not available in stratification reporting.

Several Factors Contributed to DLA's Having Inventory Levels of Spare Parts That Did Not Align with Current Requirements

On the basis of our audit, we identified several inventory management factors that contribute to a mismatch between DLA inventory levels and current requirements for secondary spare parts. These factors involve deficiencies in (1) accurately forecasting customer demands, (2) estimating lead times for acquiring parts, (3) meeting the services' estimated additional requirements for spare parts, (4) improving communications among stakeholders to ensure purchase decisions are based on accurate and timely data, (5) modifying or canceling planned purchases of items that may no longer be needed to meet currently estimated requirements, (6) determining whether inventory being stored as contingency retention stock is still needed, and (7) assessing and tracking the overall cost efficiency of its inventory management.

These factors overlap with one another but can be grouped into three major categories. The first three factors relate to determining how many parts to buy. The next three factors relate to DLA initiatives that, while showing promise for reducing the acquisition and retention of parts not needed to meet requirements, do not appear to be achieving their full potential due to limits on their implementation. The last factor—assessing and tracking the overall cost efficiency of its inventory management—reflects a deficiency in DLA's current ability to determine the extent to which it is fulfilling DOD guidance directing the military components to size secondary item inventories to minimize DOD's investment while providing the inventory needed. According to DLA officials, some of these factors—such as determining the need to retain contingency retention stocks—requires a collaborative approach among DLA; the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics; and the military services.

Inaccurate Demand Forecasts May Result in Acquiring More Spare Parts Than Needed to Meet Requirements

DLA faces challenges in aligning inventory levels with requirements due, in part, to inaccurate demand forecasting for the parts it manages. When customers' demands for parts are lower than originally forecasted, DLA can be left holding more inventory than needed to meet requirements. Conversely, when demands are higher than expected, DLA may have inventory deficits until new parts can be acquired. Having accurate demand forecasts is vital to cost-effective inventory management. DOD's supply chain regulation states that customer demand shall be part of all

DOD components' inventory management decisions; that components shall not stock an item that does not have any possibility of future demand; and that variance in demand forecasts outside established parameters should be flagged for management analysis and action.[17] DLA officials, in discussing demand planning issues with us, also stated that forecast accuracy is the most significant factor for simultaneously decreasing inventory levels while maintaining or increasing customer service.

Our prior reports on the services' management of their spare parts inventory found that problems with demand forecasting were the leading cause of mismatches between inventory levels and their requirements objectives. DOD agreed with this assessment, has included the issue in the department's strategic business management plan, and is studying potential improvements. In our current audit, we found instances within our sample of DLA items where inaccurate demand forecasts presented problems in managing spare parts and minimizing mismatches between inventory levels and requirements. For example, the March 2009 stratification report showed that for one of our sampled items (a drive assembly), DLA had a purchase request for 270 parts valued at $1.3 million. At our request, the demand planner reviewed the item in August 2009. She found notes in the record indicating the forecast for this item had been accepted; however, she determined based on her review that the forecast was too high. Her research showed that there had been a prior higher demand for this item that was nonrecurring. She told us that she subsequently reduced the demand forecast for the item.

DLA officials acknowledged that the agency can face challenges in obtaining accurate demand forecasts for items. DLA has been analyzing demand forecasting issues, emphasizing the need for better demand planning, and taking steps aimed at mitigating the impact of inaccurate demand forecasts. DLA steps include reorganizing its work force to provide additional resources aimed at improving demand planning, identifying and tracking initiatives and actions that deserve priority for

[17]DOD Regulation 4140.1-R, § C2.5.1.1 and C2.5.1.6 (May 23, 2003).

management attention for enhancing demand accuracy,[18] and adjusting forecasting models to account for a greater range of demand patterns.

Despite these positive steps, DLA is still in the early stages of assessing the issues surrounding inaccurate demand forecasting, and it has not developed an integrated long-term action plan. For example, although DLA has identified demand planning issues to focus on, it has not articulated specific goals, objectives, resources, or time frames for instituting corrective actions. Without a long-term integrated action plan that incorporates these elements, DLA may have difficulty sustaining and expanding its current efforts to improve demand forecasting issues. In commenting on this factor, DLA officials told us that the agency is providing greater management visibility and emphasis on cases where overforecasts caused higher than expected inventory levels. The officials also stated that improved demand forecasting will require a collaborative effort among DLA; the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics; and the military services.

DLA Has Not Resolved Problems with Estimating Lead Times Needed to Acquire Spare Parts

DLA has not resolved problems in accurately estimating acquisition lead times for the parts it acquires. Inaccurate lead time estimates can result in a mismatch between inventory levels and requirements because these estimates are included in calculations for purchasing parts. For fiscal years 2006 through 2008, parts needed for lead time requirements had an annual average value of $2.7 billion (20 percent) of the $13.7 billion in total inventory value. About $1.9 billion of this lead time value was for production lead time, and the remaining $0.8 billion was for administrative lead time.

In 2007, we reported that DLA tended to overestimate lead time requirements, which resulted in inventory arriving sooner than expected.[19] For example, in examining about 1 million shipment deliveries during fiscal year 2005, we found that almost 40 percent had actual lead times that were at least 90 days shorter than their estimated lead times.

[18]DLA determined that approximately 400,000 items of its 1.7 million items (24 percent) meet specific criteria and have sufficient demand data to qualify for forecasting. According to DLA, about 20 percent (or 80,000) of the 400,000 items should receive greater priority for management attention due to such factors as their dollar value and the programs they support.

[19]GAO, *Defense Inventory: Opportunities Exist to Improve the Management of DOD's Acquisition Lead Times for Spare Parts*, GAO-07-281 (Washington, D.C.: Mar. 2, 2007).

Conversely, about 3 percent of the deliveries had actual lead times that were at least 90 days longer than their estimated lead times. On the basis of that earlier analysis, we recommended that DLA review and revise the methodology and the data it uses to estimate lead time. DOD responded that our review used data prior to DLA's implementation of the Enterprise Business System, and that we had not taken into account the benefits of its new system and related business processes. In our evaluation of DOD's comments, we noted that calculating the lead times in the same manner but recording the values in a new computer system would not improve the accuracy of lead time estimates.

Determining the extent to which DLA continues to experience problems in estimating lead times for acquiring spare parts was not part of our current review, but we found instances of this problem within our sampled cases. In one case, a DLA inventory manager identified overstated lead time on a purchase of 172 helicopter valves costing DLA about $2,624 each, or about $451,000 in total. According to DLA data, the production lead time for this item was 601 days. When we discussed this case with DLA officials, they estimated that the production lead time should have been 272 days (about 45 percent of the production lead time used in the purchase decision) and said it was not uncommon for production lead times to be overstated. Using the lower lead time estimate might have reduced the purchase order requirement and DLA's investment in these valves. In another example involving a power inverter, a reduction in the lead time from 720 days to 90 days (about 13 percent of the prior estimated lead time) led DLA to cancel the purchase of 147 items. With an average price of $1,313, these canceled items had a total value of about $193,000.

DLA officials acknowledged continuing problems with overstated lead time requirements, but noted that they had made some changes since 2008 to better estimate administrative lead time. These changes include evaluating and revising DLA's internal administrative processing of purchase requests and purchase orders. The DLA officials stated that analyzing production lead time—which accounted for about more than two-thirds of the total lead time requirements for the 3-year period we analyzed—is particularly difficult because DLA does not have access to contractor data that would be needed to determine the root causes of inaccurate production lead time estimates. While the DLA officials acknowledged that such an analysis could be useful, they said it could be too costly to require contractors to generate and report the data.

DLA Faces Challenges in Efficiently Meeting the Services' Estimated Additional Requirements for Spare Parts

DLA has long faced challenges in efficiently meeting the military services' requirements for spare parts identified in the form of supply support requests and special program requirements. These two processes provide a means by which the services may submit estimated additional requirements to DLA when they first anticipate that they will need the agency to supply future spare parts. The services, however, have tended to overestimate these additional requirements, which may result in DLA's acquiring and holding inventory beyond what is needed to meet actual requirements that materialize. While DLA has internal controls for evaluating and adjusting purchases in response to the services' estimated additional requirements, these internal controls have not always operated effectively.

Supply Support Requests Have Included Overstated Requirements Forecasts

Supply support requests are the principal means by which the military services notify DLA of anticipated requirements, such as spare parts that will be needed to support the maintenance of a new weapon system.[20] The services provide forecasted requirements in their supply support requests to DLA and are required to retain documentation showing how the forecasts were computed for at least 3 years after the date the parts are needed to support the weapon system. DLA is supposed to evaluate the supply support requests and purchase materiel as it deems appropriate to meet expected requirements.

DLA officials said the services tend to overestimate requirements in their supply support requests. Data provided by DLA show that the services' estimates of forecasted requirements for supply support requests were significantly higher than their actual demands. For example, the services submitted supply support requests to DLA valued at $1.7 billion in fiscal year 2008; but by June 2009, the services had requisitioned $34 million (2 percent) of the requirements that they had forecasted.[21] The problem of overestimated forecasted requirements in supply support requests has been known for many years. As far back as 1988, the DOD Inspector General (DODIG) reported that forecasted requirements submitted by the services with their supply support requests were frequently excessive.[22] DODIG reported again in September 1993 that the services' forecasted

[20]DOD Manual 4140.26, *Defense Integrated Materiel Management Manual for Consumable Items* (May 23, 1997) prescribes the policy and procedures for supply support requests.

[21]DLA did not have data readily available on amounts requisitioned prior to fiscal year 2008.

[22]DODIG, *Requirements Forecasts on Supply Support Requests*, Report No. 88-140 (Arlington, Va.: Apr. 27, 1988).

requirements were unnecessary, unreasonable, or unsubstantiated; did not materialize at times; and resulted in unnecessary or premature investment in inventory.[23]

Although DLA has long been aware of this issue, internal controls aimed at minimizing unnecessary purchases of spare parts have sometimes operated ineffectively. For example, DOD guidance states that integrated materiel managers (demand planners in DLA) are to validate supply support requests,[24] and DLA officials identified supply support requests valued at $2,500 and higher as those that should be validated. DLA officials, however, said they have typically lacked data from the services showing how the services' requirements were calculated and, as a result, were not able to validate the supply support requests. DLA officials told us in August 2009 that to improve the implementation of this internal control, a special demand planning team started to track validations of higher value supply support requests. These officials also said that a systems change request has been submitted, but not yet implemented, to enable the Enterprise Business System to automate and track supply support request validations. Additional guidance on the supply support request process is being drafted as part of a revision to DOD guidance (DOD Manual 4140.26-M). Given the long-term nature of the problem, it is uncertain whether these steps will be effective at improving the efficiency of the supply support request program without additional DLA emphasis to reinforce and reinvigorate internal controls.

DLA officials noted that the services lack a financial incentive for minimizing their supply support requests because they do not purchase the parts from DLA using their own funds until the parts are actually needed. If a service does not later purchase all of the requested parts from DLA, the service does not incur any additional costs for the unused parts. Instead, the parts remain in DLA's inventory long term and may result in the agency having inventory levels for these items beyond requirements. Under the revolving fund approach used by DOD to finance spare parts, DLA purchases parts using working capital funds and is reimbursed when the parts are later sold to a customer. By design, working capital funds, rather than service funds, are tied up in the inventory until the parts are requisitioned. DLA officials suggested that the services might have more

[23]DODIG, *Follow-Up Audit of Requirements Forecasts on Supply Support Requests*, Report No. 93-175 (Arlington, Va.: Sept. 30, 1993).

[24]DOD Manual 4140.26-M, Chapter 4 (May 23, 1997).

incentive to submit accurate supply support requests if they were required to provide some portion of the up-front funding for DLA's initial purchase of the parts. However, the military services have resisted the idea of providing up-front funding in the past, and DLA-proposed pilot programs to test the concept have not been implemented. DOD budget officials confirmed that up-front service funding for supply support requests has never been formally proposed or evaluated. DLA officials said there could be challenges in implementing up-front service funding. For example, a service may not have funds available when the DLA purchase is made. However, up-front service funding is already required for certain DLA purchases of clothing and other textiles.

Special Program Requirements Have Often Not Materialized

Special program requirements refer to nonrepetitive requirements for spare parts that cannot be forecast based on demand data and which have the greatest probability of materializing and resulting in the eventual submission of requisitions. As with supply support requests, the services use special program requirements to plan future supply support from DLA. As part of the requirement submitted to DLA, the service identifies a specific anticipated date that the parts will be needed. On or about the specified support date, the customer is expected to submit its requisition for the parts. However, requisitions for the services' special program requirements often have not materialized.

DODIG has reviewed special program requirements and found issues similar to those with supply support requests. In 1990, DODIG reported that the majority of special program requirements submitted to DLA from the services included overstated and unsubstantiated forecast estimates.[25] It further found that internal controls had not been put in place by either the services or DLA to account for specific procurements and transactions, or to monitor the overall effectiveness of this program. A 2004 DODIG review found some internal control improvements aimed at minimizing the investment in inventory to support special program requirements, although these improvements were limited to one DLA supply center (Philadelphia).[26] Our current review of 90 sampled items showed that DLA has continued to experience problems in economically managing special program requirements. For example, March 2009

[25]DODIG, *Special Program Requirements for Logistic Support*, No. 90-087 (Arlington, Va.: June 27, 1990).

[26]DODIG, *Logistics: Defense Logistics Agency Processing of Special Program Requirements*, D-2005-020 (Arlington, Va.: Nov. 14, 2004).

inventory data showed DLA had a purchase order to satisfy a one-time special program requirement for about 1,650 mechanical drive housing parts with a total value of about $850,000. However, DLA inventory managers said the customer had requisitioned only 44 percent of the parts by the support date specified in the special program requirement submission. Upon further review of this item, the managers told us the customer may have incorrectly identified this item as a recurring need, unnecessarily increasing the quantity of parts ordered.

With regard to internal controls, DODIG's 2004 report focused on two initiatives that, at the time, had been implemented at DLA's Philadelphia supply center.[27] One was a streamlined validation process. The streamlined process was designed to automatically cancel a special program requirement if the organization submitting the requirement did not validate it within specified time frames.[28] While this process was operating at the time of our current review, DLA lacked data demonstrating its effectiveness. For example, DLA lacked data comparing prevalidation requirements to modified procurement quantities. According to DLA officials, these data have not been available since the transition to the Enterprise Business System. Furthermore, a relatively small percentage of special program requirements were identified as being validated by the services. For example, according to DLA data, the agency received special program requirements for a total of about 400,000 items for fiscal years 2007 through 2009, but requirements for only about 16,000 items (or 4 percent) had been validated.

The second internal control for managing special program requirements was a program to track the services' requisition, or "buy-back," rates. The buy-back program was aimed at tracking the rates at which the services' requisitioned parts compared with their previously submitted special program requirements and then adjusting future procurements based on these buy-back rates. DODIG found the buy-back program to be effective at reducing procurement quantities, and thereby minimized investment for

[27]DLA's Philadelphia supply center now administers this program agencywide.

[28]The validation process is to begin 90 days before an item's reorder point. The information system generates an e-mail validation request to all submitting organizations for all special program requests exceeding $10,000 in value. If no reply is received within 30 days, a follow-up e-mail is sent, and the submitting organization has an additional 30 days to respond. If no response is received, a final validation request is sent. If no response is received within 15 days of the final request, DLA automatically cancels the special program requirement.

some inventory. Prior to the buy-back program, DLA procured 100 percent of the special program requirements, according to DODIG. Despite the positive effects from the program noted in the DODIG report, our current audit found that DLA stopped updating its buy-back rates in 2006, coinciding with the implementation of the Enterprise Business System. In May 2009, DLA began again to update buy-back rates. As a result, during this period when rates were not updated, DLA may not have been optimizing investment in inventory purchased for special program requirements.

DLA Inventory Managers Do Not Consistently Have Accurate, Timely Data to Make Informed Purchase Decisions

DLA inventory managers do not consistently have accurate, timely data needed to make informed purchase decisions, which may lead to the acquisition of parts that are not needed to meet requirements. Although DLA recognizes that sound supply chain management principles emphasize the need for effective communication within the agency and externally with all other stakeholders in the supply chain, we found that DLA inventory managers have experienced gaps in effective communication and data exchange. Our review of sampled items identified cases where inventory managers, as a result of these gaps, lacked accurate, timely data that could have influenced purchase decisions. For example:

- DLA received a purchase request in June 2008 for 230 aircraft access covers at a cost of about $3,900 each for a total cost of about $897,000. Because March 2009 inventory data indicated that DLA had significant inventory for this item beyond its requirements objective, we asked DLA to review this purchase request. Inventory managers indicated that they had not recently communicated with the customer for this item. When the inventory managers obtained updated information following our inquiry, they determined that the purchase request should have been reduced from 230 to 35 parts costing about $136,500.

- DLA issued a purchase order in June 2008 for 37 pad assemblies for Navy aircraft, with a total value of about $402,000. However, DLA determined later that year that the part was obsolete and the purchase order should be canceled. The contractor estimated that termination costs for canceling the order would be about $111,000. The purchase order was canceled in early 2009.

- DLA purchased parts kits for an Army vehicle but was not aware until later that the customer's original requirement was no longer valid. Specifically, DLA inventory data as of September 2008 showed that the agency had

17,737 kits on hand and had placed a purchase order for 47,146 additional kits. The total value of the purchase order was about $1.3 million. In May 2009, DLA had 60,717 kits on hand and 3,574 on order, indicating that requirements for the total amount of inventory (including both on-hand and on-order parts) had remained about the same. When we inquired about this item, inventory managers told us there had been several months of no demand and that the monthly forecast had been reduced from 144 to 1. Furthermore, DLA checked with its Army customer and learned that the Army did not need the item as indicated in its purchase request.

DLA in 2005 began an initiative called demand data exchange to improve collaboration between the agency and customers on the management of certain items. Under this program, DLA works collaboratively with customers on selected items to evaluate historical demand data and tailor procurement plans. Participating customers select items that they anticipate would benefit from this enhanced collaboration. For example, an item may be selected because requirements are expected to fluctuate. As of November 2009, DLA had rolled out the program to about 80 customers and for about 47,500 items. DLA officials told us that they were reviewing performance data from their existing demand data exchange activities and these data indicated the demand data exchange program effectively improved collaboration in some instances but not in others. However, DLA had not yet conducted a formal program evaluation, and it was unclear at the time of our review whether or to what extent DLA was planning to expand this initiative to incorporate additional customers and items.

DLA Process for Modifying or Canceling Unneeded Purchases of Spare Parts Has Been Implemented on a Limited Basis

While DLA has a process for identifying and limiting the purchase of spare parts not needed to meet requirements, several factors have limited its implementation and potential for minimizing investment in unneeded inventory. Through this "over-procurement" process, DLA identifies purchase requests and purchase orders that may no longer be needed to meet currently estimated requirements; evaluates each case in more detail to determine whether to proceed with, or to cancel part or all of, the purchase; and then executes cancellation decisions when applicable. DLA data for fiscal year 2009 showed that a total of $275 million in purchase orders and purchase requests were reviewed, with $123 million recommended for cancellation and $44 million actually cancelled. The canceled amount represented 16 percent of the $275 million reviewed and about 36 percent of the $123 million recommended for cancellation. Where the data distinguished between purchase orders and purchase requests, the analysis indicated that most of the cancellations were purchase

requests.[29] Our review of 90 sampled items identified cases where DLA had planned purchases that appeared to exceed requirements but for some reason did not go through the over-procurement process. For example:

- DLA inventory data for a combustion chamber liner showed that as of March 2009, the agency had 527 parts on hand and another 762 parts on order. The average unit price for the item was $3,748, and the total value for all 1,289 parts was $4.8 million. Inventory managers told us that even though this item was identified as being in the top 5 percent in dollar value of aviation inventory, it did not have demand every month, and a more recent computation indicated the item may be over-procured by 403 parts priced at $1.5 million. We were told that this item was not selected for an over-procurement review until we requested information.

- For another item, an instrument mounting part for B1B aircraft, DLA had a purchase order for 86 parts. With an average unit price of $13,410, the total value of parts on the purchase order was $1.2 million. Inventory officials said the production lead time was recently extended from 322 days to between 800 and 1,000 days, but they did not know why. The officials added that the item appeared over-procured by 31 parts valued at about $416,000. They said they would not have reviewed this item if we had not brought it to their attention.

DLA officials expressed the view that these cases of missed opportunities are not representative of the overall success of the over-procurement process at identifying and reducing purchases of unneeded parts. However, DLA has not formally evaluated the effectiveness of the over-procurement process. In addition, while we agree the over-procurement process has shown promise, our example cases indicate that it may have greater potential for minimizing investment in inventory than has been achieved to date. We identified several factors that may be limiting the impact of the over-procurement process. These factors include the following:

First, purchases are not identified and reviewed as potential over-procurements if they do not meet or exceed DLA-established minimum thresholds. DLA initially established a minimum threshold of 150 percent of the requirements objective for identifying a potential over-procurement—that is, the value of the purchase request or purchase order

[29]The data included one maritime item with both a purchase request and a purchase order outstanding.

had to exceed the value of the requirements objective by at least 50 percent in order to be flagged for review. In 2008, DLA lowered the threshold to 125 percent of the requirements objective, which flagged a greater number of potential over-procurements for further review.[30]

Second, items are not identified and reviewed for potential over-procurement if they support programs that have been exempted from the process.[31] A number of items in our sample supported the Mine Resistant Ambush Protected vehicle—a program exempted from over-procurement review—and were identified by inventory managers as being in over-procured positions at the time of our site visit. For example, March 2009 inventory data for a winch parts kit for the vehicle showed that DLA had 4 kits on hand and an existing purchase order for 220 kits. A purchase request for 1,200 additional kits was generated in February 2009, a purchase order was placed in April 2009, and the items were received in May 2009. In the meantime, forecasted demand for this item dropped in April 2009 from about 51 per month to 6 per month. At the demand rate of 6 per month, the 1,424 kits represented about 20 years of supply and a total value of about $691,000.

Third, items flagged as potential over-procurements may go through a lengthy review process, which can make it more difficult to execute a cancellation decision. Although DLA lacked summary data on the overall timeliness of the process, individual cases may take several months from the time a potential over-procurement is identified through when a final decision is reached. For example, inventory data for one of our sampled items, an antenna accessory kit, showed that DLA had 26 parts on hand and 46 on order as of August 2008. With an average unit cost of about $3,000, the total value of these 72 parts was about $216,000. The inventory manager told us that, due to a drop in demand, the item was in an over-procurement position. Over-procurement reports for this item were generated in February 2009, May 2009, and September 2009. When the supply planner tried to cancel the on-order parts after receiving the

[30]DLA is concerned that reducing the threshold too much may result in costs associated with placing and terminating contracts and the activities associated with initiating a purchase, terminating the purchase before completion, and then having to initiate a new purchase.

[31]Programs may be exempted for various reasons. DLA has exempted items that are categorized as safety related or that support a special program such as the Navy's nuclear reactor program. DLA has also exempted items at depots where DLA is taking over the retail management.

September report, the contract administrator determined the planner's request was not timely, and the cancellation was not executed. This review process may be lengthy because numerous individuals are involved in evaluating and reviewing the decision, particularly for higher value purchases where a cancellation has been recommended. In addition, the supply planner responsible for the item may not have extensive experience with the item, which could increase the time needed to evaluate a potential over-procurement. With responsibility for thousands of items, each planner has limited time to spend on any particular item and must make trade-offs in how to use the available time. DLA officials said recent management emphasis has been placed on making the processing of over-procurement reports more timely.

Fourth, according to DLA officials and inventory managers we interviewed for our sample, other factors can limit the impact of the over-procurement process. For example, data on customers' requirements for the items may be inaccurate or obsolete; circumstances related to a potential over-procurement can be complex; canceling or amending purchase orders may be difficult because of a high termination cost; and canceling a purchase request within DLA becomes more difficult the closer it gets to contract award because of the amount of time and work invested.

DLA officials identified plans to improve the over-procurement process in fiscal year 2010. First, DLA planned to expand the number and value of purchases flagged for over-procurement review. Also, DLA officials said they planned to target more attention on identifying and reducing purchase orders. Finally, DLA officials said tighter goals have been set, including at least a 10 percent improvement compared to fiscal year 2009 performance. These planned improvements in the over-procurement process recognize that there is greater potential for minimizing investment in inventory than has been achieved to date.

DLA Has Reported Progress in Reducing the Proportion of Inventory That Is Inactive, but the Agency Continues to Store Large Amounts of Contingency Retention Stock

DLA has reported progress toward its goal of rebalancing its inventory and reducing the proportion of inactive inventory—those items in the inventory that are not needed to meet the requirements objective plus 2 years of future supply (collectively referred to as the approved acquisition objective).[32] In July 2008, DLA observed that, as measured in value, half of its inventory was active and the other half inactive, a split that the agency determined was too heavily weighted on the inactive side. To help rebalance its inventory, DLA established active inventory goals for individual supply chains, including aviation (75 percent), maritime (74 percent), and land (80 percent). DLA reported that it made progress toward rebalancing its inventory, although it had not met its specific goals for these supply chains as of June 2009 (see table 4).

Table 4: Value of DLA Active and Inactive Inventory Compared with Goals, by Supply Chain, as of June 2009

Dollars in billions			
	Aviation	**Maritime**	**Land**
Total inventory	**$6.0**	**$2.5**	**$1.4**
Inactive inventory:			
Economic retention	0.8	0.4	0.2
Contingency retention	1.3	0.6	0.1
Potential excess	0.1	[a]	[a]
Subtotal: Inactive inventory	**$2.2**	**$1.0**	**$0.3**
Subtotal: Active inventory	**$3.8**	**$1.5**	**$1.0**
Percent active	**63%**	**60%**	**79%**
Goal for percent active	75%	74%	80%

Source: GAO presentation of DLA data.

Note: Totals may not add up due to rounding.

[a]Less than $50 million.

DLA officials attributed the progress in rebalancing inactive and active inventory to its efforts in fiscal years 2008 and 2009 to dispose of parts. Despite this progress, DLA continues to have large amounts of contingency retention stock. Our data analysis for fiscal years 2006 through 2008 showed that the agency annually held an average of about

[32]In contrast, DLA defines active inventory as materiel in the approved acquisition objective. DLA Memorandum, *Improving DLA Inventory Management and Performance* (July 25, 2008).

$2.6 billion of its secondary inventory as contingency retention, and the data presented in figure 4 show that DLA reported having about $2 billion in contingency retention stock as of June 2009. Some of this inventory may no longer be needed. However, DLA has not determined the extent that its contingency retention stock is no longer needed because the services have not provided input needed to make these determinations.

DLA has a retention and disposal program aimed at identifying items in its contingency retention stock that should be retained and items that are potential excess and should be considered for disposal or reutilization. The agency's contingency retention requirements are aimed at precluding disposal of assets that might be needed for future nonrecurring demand, such as provisioning or planned maintenance actions; items used primarily in wartime which have limited use in peacetime; and future foreign military sales. Since DLA holds contingency retention stock for the services, DLA depends on the services to provide input on which contingency inventory items are no longer needed and should be considered for disposal or reutilization.

DOD regulations require DLA to annually evaluate and attest to the extent that its contingency retention stock should be retained.[33] Specifically, the DOD regulations require that DLA ensure that mechanisms are in place to take proper retention, redistribution, and disposal actions against items in that category of inventory. To ensure that contingency retention stocks correspond with the needs for current and future force levels, DLA is to review and validate its methodologies for making contingency retention decisions. Contingency retention reviews should focus on verifying that the reason for contingency retention still exists and the reason is properly recorded. The inventory management organization commander or designee is required to attest in writing to the validity of the annual review decisions. According to DLA officials, they cannot achieve the goals of the regulation without service input, and information from the services would enable the agency to reduce unneeded contingency retention stock in its inventory. However, they noted that the services have not been providing input to DLA. DLA has informed the services that all contingency retention levels must be validated or eliminated in fiscal year 2010. However, if the services do not provide the necessary information to DLA, then DLA may continue to carry unneeded inventory.

[33]DOD Regulation 4140.1-R, § C2.8.1.1 (May 2003).

DLA Does Not Assess and Track the Cost Efficiency of Its Inventory Management

Although DOD's supply chain regulation directs the military components to size secondary item inventories to minimize DOD's investment while providing the inventory needed, DLA does not assess and track the cost efficiency of its inventory management to determine whether it is meeting this requirement. DLA has effectiveness-related metrics aimed at measuring the extent to which the agency is able to satisfy customer requisitions and other aspects of its performance, but it lacks goals and metrics to measure the cost efficiency of its inventory management. As a result, DLA does not know whether it is meeting inventory requirements at least cost.

DOD's supply chain management regulation emphasizes a need for both effective and efficient management of materiel. The regulation sets out management goals such as considering all costs associated with materiel management in making best-value logistics decisions, and directs DOD components and DLA to take a number of steps to implement these goals. These steps include balancing the use of all available logistics resources to accomplish timely and quality delivery at the lowest cost; and measuring total supply chain performance based on timely and cost-effective delivery. To help ensure efficient and effective supply chain management, the regulation also calls for the use of metrics to evaluate the performance and cost of supply chain operations. These metrics should, among other things, monitor the efficient use of DOD resources and provide a means to assess costs versus benefits of supply chain operations.[34] However, the regulation does not prescribe specific cost metrics and goals that the services or DLA should or must use to track and assess the efficiency of their inventory management practices.

DLA has numerous metrics for assessing and tracking supply chain performance. None of these, however, enable DLA to monitor the efficient use of resources for inventory management or to provide a means for assessing costs versus benefits. Examples of DLA's current key metrics include orders received, materiel availability, unfilled orders, and purchase requests awarded. Other DLA performance metrics track demand plan accuracy; inventory turnover; the timeliness, quantity, quality, and documentation of filled orders; the receipt and transportation of materiel; and customer satisfaction. Two additional metrics that track supply chain financial performance are cash performance plan (the difference between monthly disbursements and collections) and net operating result (metrics

[34]DOD Regulation 4140.1-R, §§ C2.8.1.1, C2.8.1.1.2, and C2.8.1.2.6 (May 23, 2003).

that track revenue and expenses monthly, assess performance against the budget, and identify variances early in the fiscal year). DLA officials told us they are developing a framework for integrating effectiveness measures with supply chain costs, but they have not developed milestones for completing the design or implementation of this framework. They also told us that they believe the Office of the Secretary of Defense should be involved in developing any additional metrics to monitor the efficient use of DOD resources and provide a means to assess costs versus benefits of supply chain operations.

DLA officials also expressed the view that a lack of cost-efficiency metrics does not necessarily mean that DLA is being wasteful. They asserted that DLA strives to be a good steward of government resources. However, without such metrics, DLA cannot demonstrate that it is minimizing inventory costs consistent with the DOD regulation. In addition, without such metrics, DLA is likely to have difficulty in establishing (1) a baseline for the agency's collective efforts to improve efficiencies in various areas of inventory management, (2) a means for DLA to demonstrate progress against the baseline, and (3) a basis for understanding and responding to any positive or negative cost-efficiency trends that may occur in the future.

Moreover, the National Defense Authorization Act for Fiscal Year 2010[35] requires the Secretary of Defense to submit a comprehensive plan to the congressional defense committees for improving the inventory management systems of the military departments and DLA with the objective of reducing the acquisition and storage of secondary inventory that is excess to requirements.[36] The Secretary of Defense's comprehensive plan is to include (among other things): (1) a plan for a comprehensive review of demand forecasting procedures to identify and correct any systematic weaknesses in such procedures, including the development of metrics to identify bias toward over-forecasting and adjust forecasting methods accordingly; (2) a plan to reduce the average level of on-order

[35]Pub. L. No. 111-84,§ 328 (2009). Additionally, the law directs the Comptroller General to submit a report setting forth an assessment of the extent to which the plan meets the requirements of section 328 to the congressional defense committees, not later than 60 days after the plan's submission, and an assessment of the extent to which the plan has been effectively implemented, not later than 18 months after the plan's submission.

[36]Section 328(d) of Pub. L. No. 111-84 (2009) states that for the purposes of that section, the term "inventory that is excess to requirements" means inventory that is excess to the approved acquisition objective and is not needed for the purposes of economic retention or contingency retention.

secondary inventory that is excess to requirements, including a requirement for the systemic review of such inventory for possible contract termination; (3) a plan for the review and validation of methods used by the military departments and DLA to establish economic retention requirements; (4) a plan for an independent review of methods used by the military departments and DLA to establish contingency retention requirements; and (5) a plan for a comprehensive assessment of inventory items on hand that have no recurring demands, including metrics to track years of no demand for items in stock and procedures for ensuring the systemic review of such items for potential reutilization or disposal.

Conclusions

Our review showed that DLA can enhance its efforts to manage spare parts more effectively primarily by focusing on the front end of the process when decisions are being made on what items to buy and how many in response to requirements. Our analysis showed that DLA had substantial mismatches between spare parts inventory levels and its current requirements for each of the 3 fiscal years we reviewed, and it has invested in large amounts of inventory that now have little or no projected demand. The accumulation of inventory beyond either the requirements objective or the approved acquisition objective is caused by many overlapping factors, including some that have been identified in prior audits. The best opportunities for minimizing investment in unneeded inventory while still meeting required inventory levels are at the front end of the process when the agency is making decisions on what and how much to purchase. In addition, DLA needs to have effective policies and practices in place to modify planned purchases as appropriate when demands for parts change. DLA has been taking positive steps to correct problems it has identified in its inventory management. In addition to enterprisewide changes in business practices and replacement of legacy information systems, DLA has efforts aimed at improving specific inventory management practices, such as the over-procurement process and the demand data exchange initiative. While some of DLA's steps are relatively recent and may not be fully implemented, the magnitude of inventory levels beyond current requirements suggests that the agency has additional opportunities to minimize its investment in secondary inventory while still meeting required inventory levels. If DLA does not take additional actions to better align inventory levels and requirements, it will continue to invest in spare parts long before they are needed to meet customer demand or in the future become potential excess stock. Acquiring inventory for which demand is much lower than expected reduces the amount of funding available for other military needs. The recent legislative requirement directing the Secretary of Defense to submit a comprehensive plan for

improving inventory management practices provides further impetus for addressing the factors we identified in this review that contribute to mismatches between inventory levels and requirements.

Recommendations for Executive Action

To minimize investment in unneeded spare parts inventory, we recommend that the Secretary of Defense direct the Director, Defense Logistics Agency, to take the following five actions:

- Establish an action plan for completing the agency's evaluation of identified demand planning issues, and include goals, objectives, resources, and time frames in this action plan.
- Develop an approach for working with suppliers to assess the root causes of inaccurate production lead time estimates and implement corrective actions linked to these root causes.
- Reinforce and reinvigorate effective internal controls aimed at evaluating and making adjustments to the military services' estimated additional requirements, including both supply support requests and special program requirements.
- Conduct a program evaluation of the demand data exchange initiative to determine what, if any, additional actions should be taken to (1) improve communication and data exchange internally and with military customers and suppliers and (2) expand the initiative across the enterprise (for example, to other customers, items, and processes).
- Evaluate the effectiveness of the agency's process for identifying and reducing potential over-procurements and determine the feasibility of applying the process on a wider scale.

In addition, we recommend that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Director, Defense Logistics Agency, and the Secretaries of the Army, the Navy, and the Air Force, to take the following two actions:

- Formally evaluate and report on the feasibility of requiring up-front military service funding for a portion of their supply support requests.
- Establish goals and metrics for tracking and assessing the cost efficiency of inventory management in accordance with DOD's policy requiring DLA and the services to minimize investment in secondary item inventory while

providing inventory needed; develop and implement an approach for integrating these goals and metrics with inventory management improvement efforts; and incorporate the goals and metrics into existing management and oversight processes.

Finally, we recommend that the Secretary of Defense direct the Secretaries of the Army, the Navy, and the Air Force to certify to DLA which items and what quantities of the contingency reserve stock should be retained, in response to DLA's requests that they do so, and direct the Under Secretary of Defense for Acquisition, Logistics and Technology to provide guidance and oversight of this certification process.

Agency Comments and Our Evaluation

In its written comments on a draft of this report, DOD concurred with our recommendations and identified corrective actions to be completed. The planned actions were generally responsive to our recommendations. The department's written comments are reprinted in appendix II.

DOD concurred with our recommendation that DLA establish an action plan for completing an evaluation of identified demand planning issues. DOD stated that DLA will establish an action plan that will include goals, objectives, resources, and time frames and that will be completed in the fourth quarter of fiscal year 2010. DOD cited a number of actions that are already underway to evaluate and adjust demand inputs and also commented that over-forecasting in the Enterprise Business System does not always equate to over-buying because of actions to mitigate supply planning impacts of over-estimated demand. We believe that DOD's planned action is responsive to our recommendation.

DOD concurred with our recommendation that DLA develop an approach for assessing the root causes of inaccurate production lead time estimates and implement corrective actions linked to these root causes. DOD stated that DLA has already identified several root causes for inaccurate lead times, including suppliers not accurately predicting lead time from subcontractors, suppliers including "buffers" in their projected production time, and suppliers relying on past lead times for current purchase requests. DOD also identified DLA management actions to challenge the lead time quotes from vendors to ensure the quotes are realistic, look at required delivery dates on contracts, conduct reviews to identify suspected excessive production lead times, and adjust these lead times as appropriate. It said that DLA will continue to work with suppliers to improve estimates and noted that DLA has been able to reduce production lead time over-estimates since early 2009. We recognize the value of these

actions and believe DLA's efforts could be further enhanced by identifying in measurable terms the extent to which specific root causes are contributing to inaccurate production lead time estimates, and then using these data as benchmarks to assess the effectiveness of corrective actions.

DOD concurred with our recommendation that DLA reinforce and reinvigorate effective internal controls aimed at evaluating and making adjustments to the military services' supply support requests and special program requirements. According to DOD, DLA will reinforce effective internal controls and has already enhanced internal controls for special program requirements. DOD cited, for example, a recent effort to eliminate ongoing discrepancies and issues with Army special program requirements. DOD said this effort eliminated over $200 million in Army special program requirement submissions. Although we did not review this effort or the results cited by DOD, it highlights the potential positive effects that further reinforcing and reinvigorating internal controls might have if such actions are implemented.

DOD concurred with our recommendation to conduct a program evaluation of the demand data exchange initiative to determine what, if any, additional actions should be taken to improve and expand the initiative. DOD said that DLA has an evaluation of the initiative underway, with completion set for February 2011. As part of its evaluation, DLA will review items as potential candidates for collaboration partnerships with additional customers and suppliers and will also look to continue improving forecast accuracy with its current collaboration customers. DOD also cited actions by DLA to modify its business rule logic, in response to feedback from current customers, and to begin holding collaboration forums in August 2010 to, among other things, expand the use of demand data exchange. We believe these actions are responsive to our recommendation.

DOD concurred with our recommendation that DLA evaluate the effectiveness of the agency's process for identifying and reducing potential over-procurements and determine the feasibility of applying the process on a wider scale. DOD commented that DLA has made significant progress in reducing its over-procurements. For example, in 2009, the aviation supply chain initiated a review of its over-procurement process, and initial findings from that review have been adopted DLA-wide, resulting in significant cancellations of purchase requests. DLA will also evaluate ways to increase purchase order cancellations and, by October 2010, will complete a review and validation of items currently being excluded from the over-procurement process. According to DOD, DLA will ensure that

any items it continues to exclude from the systemic over-procurement process will be subject to a separate review process that allows for cancellation of purchase requests and purchase orders exceeding requirements. We believe the actions cited by DOD are positive steps. Because this process provides opportunities on a continuing basis for DLA to identify and limit the purchase of spare parts that may no longer be needed to meet currently estimated requirements, the agency would benefit from a thorough evaluation of the over-procurement process, including identifying any factors that may be limiting its potential impact.

DOD concurred with our recommendation to formally evaluate and report on the feasibility of requiring up-front funding from the military services for a portion of their supply support requests. It said that the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Office of the Under Secretary of Defense (Comptroller) and the military services, will evaluate and report on the feasibility of requiring up-front funding of supply support requests. DOD also said that DLA is pursuing a pilot effort with the Navy and the Marine Corps to support the H-1 helicopter, wherein DLA and the services share the burden of investment risk. The concept of this initiative is to have the Navy and the Marine Corps pay half of the total cost of the supply support request investment in advance of the anticipated support date. DLA, in turn, will honor the total supply support request requirement and buy both retail and wholesale quantities. We believe these planned actions are positive steps and responsive to our recommendation, although DOD did not cite time frames for completing either its evaluation or the pilot project involving the H-1 helicopter.

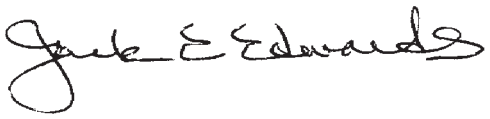
DOD concurred with our recommendation to establish goals and metrics for tracking and assessing the cost efficiency of inventory management. DOD stated the department is undertaking a comprehensive review of its inventory management practices, to include establishing goals and metrics for tracking inventory management improvement initiatives and cost efficiency. DOD is developing an improvement plan that will include goals, objectives, metrics, targets, and a governance process for overseeing execution and refreshing the plan on a regular basis. The target for publishing the plan is the last quarter of fiscal year 2010. We believe the inclusion of cost-efficiency goals and metrics as part of overall efforts to improve inventory management is responsive to our recommendation.

DOD concurred with our recommendation aimed at identifying which items and what quantities of these items to retain as contingency reserve stock. It said the military services and DLA are collaboratively reviewing

contingency retention inventory and the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics will review the results of that review once complete. In addition, the department stated that, in conjunction with its previously discussed plan for improving inventory management practices, it will conduct an independent review of contingency retention methodologies. That review, according to DOD, will highlight any changes in guidance necessary to improve the contingency retention process. We believe DLA's planned actions are responsive to the recommendation.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its date. At that time, we will send copies to interested congressional committees; the Secretary of Defense; the Secretaries of the Army, the Navy, and the Air Force; the Under Secretary of Defense for Acquisition, Technology and Logistics; the Director, DLA; and the Director, Office of Management and Budget. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov/.

If you or your staff have any questions concerning this report, please contact me on (202) 512-8246 or edwardsj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.



Jack E. Edwards
Director, Defense Capabilities and Management

Appendix I: Scope and Methodology

We conducted work at the Defense Logistics Agency's (DLA) headquarters and at DLA Supply Centers in Richmond, Virginia, and Columbus, Ohio. We used DLA stratification data to determine the extent to which the DLA's inventory of spare parts reflected the amount needed to support requirements. The Department of Defense (DOD) requires DLA and each military service to semiannually prepare inventory stratification reports, which are used to determine procurement and repair budget requirements and identify potential excess or reutilization stock.[1] Stratification is a process that applies assets, by type, for an individual item against requirements for the same item in a prescribed priority sequence. The stratification reports serve as a mechanism for matching on-hand and on-order inventory to requirements.

We conducted the following steps in our analysis of inventory data:

- Obtained DLA's stratification summary data for three DLA supply chains—aviation, land, and maritime. We also obtained item-specific electronic files as of October 30 of each fiscal year from 2006 through 2008. These data were the most recent available for our analysis. Our analysis was based on analyzing DLA's item stratifications within the opening position table as defined for DOD's Central Secondary Item Stratification Reports. Opening position data represent current requirements as of a certain cutoff date and do not include any forecasted requirements or simulations. DLA's secondary inventory data are identified by unique stock numbers for each unique item, such as an engine for a particular aircraft. DLA may have in its inventory multiple quantities of the same item, which we refer to as parts.

- Assessed the reliability of the data to be used in our audit. While our assessments occurred throughout our analyses, most of our efforts to evaluate the data were concentrated in the initial stages of data analysis. Those assessments included reviewing DOD requirements for secondary spare parts inventory reporting, comparing the data we generated from DLA-provided electronic files to its summary tables, searching for and reconciling inconsistent information (e.g., out-of-range and missing data), and discussing DLA's data and our findings with database managers. After assessing DLA's data, we determined that the data were sufficiently reliable for the purposes of our analysis and findings.

[1]DOD Regulation 4140.1-R, §§ C9.1.2.1 and C9.1.2.3 (May 23, 2003).

- Calculated the value of each unique item by multiplying the quantity of parts for an item by the item's moving average unit price, which is the latest acquisition cost for the item. We computed total values for all items in DLA's inventory and recreated the stratification tables. This computation approach is consistent with DOD's process for valuing assets in its annual Supply System Inventory Report. Values do not include DLA cost recovery rates (overhead charges).

- Converted then-year dollars to constant fiscal year 2008 dollars using DOD operations and maintenance price deflators.[2]

We analyzed the data to determine the extent to which DLA had more inventory than was needed to satisfy its requirements objective based on the opening position table of DLA's budget stratification report. DOD defines the requirements objective as the maximum authorized quantity of stock for wholesale items.[3] However, if DLA has more inventory on hand or on order than is needed to satisfy its requirements objective, it can allot inventory that is beyond its requirements objective to satisfy forecasted demands over a 2-year period. When the forecast is added to its requirements objective, it constitutes the approved acquisition objective. Inventory beyond an item's approved acquisition objective is identified as inactive inventory and is applied to economic retention requirements[4] and then to contingency retention requirements.[5] Only after applying inventory to satisfy these additional requirements would DLA consider that it has more inventory than is needed and would consider this inventory for potential reutilization or disposal.[6] We used the requirements objective as a criterion for our analysis because, according to DOD Regulation 4140.1-R, it establishes the target quantity for replenishing an item's level of stock through procurement. DOD's requirements objective process does not consider the 2-year forecast or inactive inventory as additional

[2]DOD Comptroller, *National Defense Budget Estimates for FY 2009* (March 2008), p. 47.

[3]DOD Regulation 4140.1-R (May 23, 2003), AP1.1.126. DOD refers to this inventory level as its "total requirements objective."

[4]Economic retention inventory includes items that have been determined to be more economical to keep than to dispose of because they are likely to be needed in the future.

[5]Contingency retention inventory exceeds economic retention inventory and would normally be processed for disposal, but it is retained for specific contingencies.

[6]Potential reutilization and/or disposal materiel exceeds contingency retention requirements and has been identified for possible disposal but with potential for reutilization.

requirements when determining inventory needs. The requirements objective is reflected in DLA stratification reports as material needed to meet various operating requirements (comprised of low demand items, war reserves, back orders, and safety levels) and also factors in the time required to acquire parts—or acquisition lead time—as well as an economic order quantity that may be added to these requirements.

We also analyzed the data to determine the extent to which DLA had less inventory than was needed to satisfy its requirements. We considered DLA to have inventory deficits if levels of on-hand inventory were insufficient to meet the operating requirements. We used this criterion level because it reflects DLA's ability to respond to an immediate demand for a secondary inventory item. DOD and DLA officials said they would not consider inventory to be in true deficit position if new parts are on order. Therefore, we also analyzed the extent to which on-order inventory for those items would cover the on-hand inventory deficits identified.

Additionally, we calculated, based on DLA's forecasted demand, the number of years of supply for each item with on-hand and on-order quantities greater than the requirements objective. Our calculations were based on quantity of parts and demand for those parts at the time of stratification in October 2006 and October 2008. We identified an annual demand forecast for individual items with inventory beyond the requirements objective in the stratification reports for fiscal years 2006 and 2008. We divided inventory beyond the requirements objective by the annual demand forecast to obtain the number of years of supply the inventory levels would satisfy. We grouped these data into categories as follows: up to 2 years, more than 2 to less than 10 years, over 10 years, and no forecasted demand.

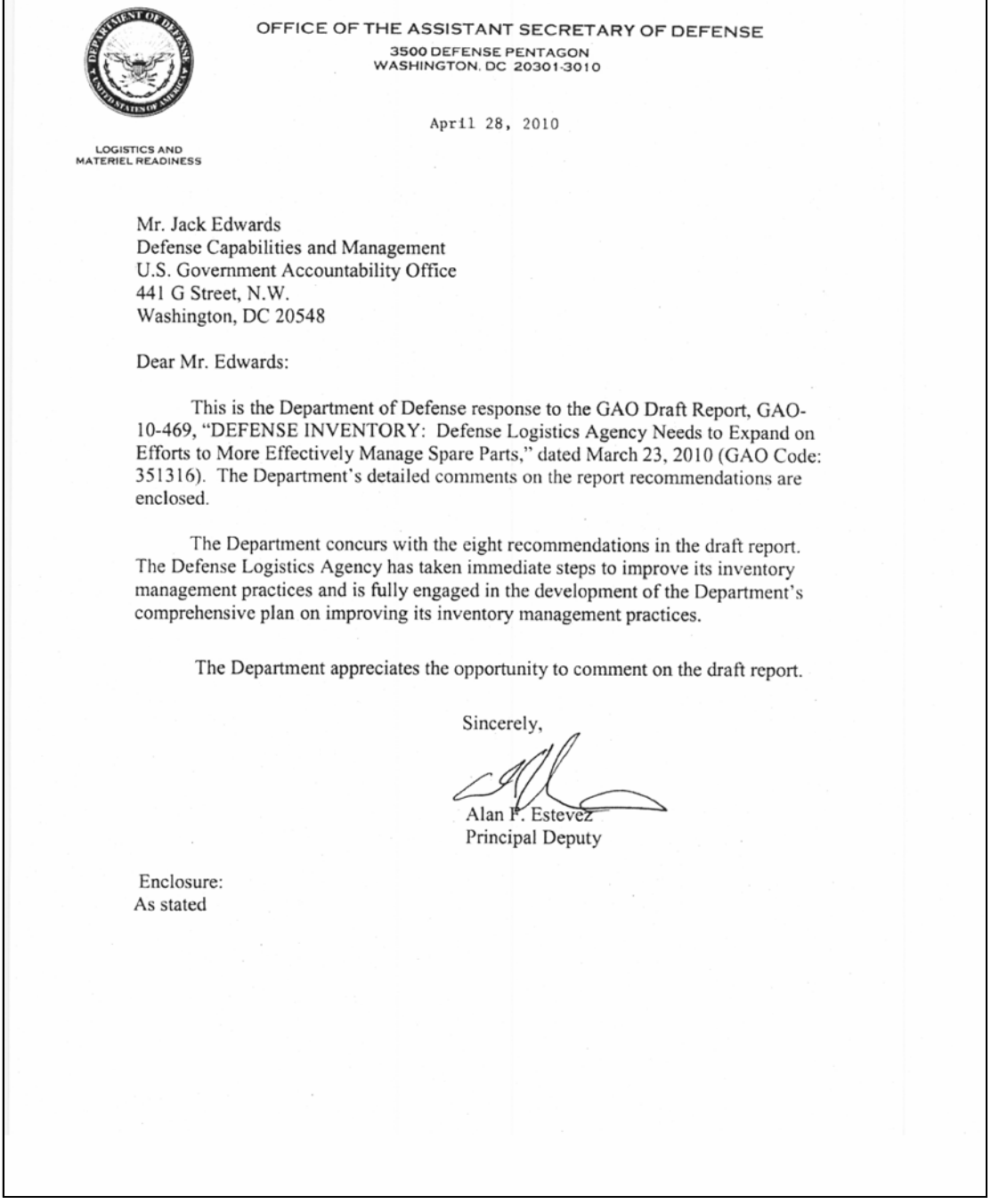
To identify causes for DLA's having inventory that does not align with requirements, we used a case study approach using a nonprobability sample of 90 inventory items for which DLA inventory data indicated a mismatch between inventory levels and requirements. We used March 2009 stratification data because these were the most recent available when we selected our case studies. From the data set, we identified those items with inventory levels that were beyond the requirements objective and further identified those items with open purchase requests and open purchase orders. We focused on such items because DLA did not yet have physical possession of the items and there could be an opportunity for DLA to modify or cancel the request or order to reflect changes in demand. Of the items meeting these criteria, we identified those with the highest purchase request and purchase order values, as determined by

DLA's moving average price, and further identified items where at least one-third of the value was stratified to retention or potential disposal categories. We then selected an equal number of items as case studies from each of DLA's three supply chains—aviation, land, and maritime—and selected 10 items with open purchase orders and 10 with open purchase requests—for a total of 60 items. We selected 30 additional items for our sample where the March 2009 data showed that there were insufficient quantities of parts on hand to meet the requirements objective. We identified these items with purchase requests that also had the greatest back order deficits by value, as determined by DLA's moving price average. Selections based on purchase request value and back order data helped identify items experiencing more current and critical deficits. We met with DLA inventory managers responsible for managing the items in our sample to obtain information on factors that contributed to the apparent mismatch between inventory levels and requirements. For example, we discussed and documented the initial requirements, any adjustments, current status, and future plans. This provided insight into how inventory management processes were applied to these items. Because we used a nonprobability sample, our results cannot be projected to items outside our sample.

We also interviewed DLA headquarters officials and other agency personnel to obtain information about DLA's inventory management policies and practices, inventory improvement initiatives, and other activities related to managing spare parts.

We conducted this performance audit from February 2009 to May 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comments from the Department of Defense



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

LOGISTICS AND
MATERIEL READINESS

April 28, 2010

Mr. Jack Edwards
Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Edwards:

This is the Department of Defense response to the GAO Draft Report, GAO-10-469, "DEFENSE INVENTORY: Defense Logistics Agency Needs to Expand on Efforts to More Effectively Manage Spare Parts," dated March 23, 2010 (GAO Code: 351316). The Department's detailed comments on the report recommendations are enclosed.

The Department concurs with the eight recommendations in the draft report. The Defense Logistics Agency has taken immediate steps to improve its inventory management practices and is fully engaged in the development of the Department's comprehensive plan on improving its inventory management practices.

The Department appreciates the opportunity to comment on the draft report.

Sincerely,

Alan F. Estevez
Principal Deputy

Enclosure:
As stated

GAO Draft Report Dated March 23, 2010
GAO-10-469 (GAO CODE 351316)

"DEFENSE INVENTORY: DEFENSE LOGISTICS AGENCY NEEDS TO EXPAND ON EFFORTS TO MORE EFFECTIVELY MANAGE SPARE PARTS"

DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Director, Defense Logistics Agency, to establish an action plan for completing the agency's evaluation of identified demand planning issues, and include goals, objectives, resources, and time frames in this action plan.

DOD RESPONSE: Concur. The Defense Logistics Agency will establish an action plan for completing the agency's evaluation of its demand planning process currently underway. The plan will include goals, objectives, resources and time frames for actions and be completed Fourth Quarter FY2010. Significant actions are already underway to continuously evaluate and adjust demand input prior to incorporation into the DLA demand plan. DLA has established management objectives for Demand Plan Accuracy at the enterprise and demand chain level. The objectives are based on a three-month timeframe, resulting in holding DLA's demand planners to a very high standard of performance. Monthly performance reviews are presented to DLA senior leaders.

It is important to note that over-forecasting in EBS does not always equate to over-buying, as actions are taken monthly to mitigate Supply Planning impacts of over-estimated demand in order to optimize obligation authority utilization. Because improving Demand Planning remains a top priority for DLA, requiring a continuous focus on both people and system settings, HQ DLA hosts a bi-monthly Demand Planning Executive forum (attended by its field activity Deputy Commanders) to ensure improvement actions on all aspects of Demand Planning (system-generated statistical forecasts, Customer input, and Demand Planner input) are aggressively identified, pursued, and tracked.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense direct the Director, Defense Logistics Agency, to develop an approach for working with suppliers to assess the root causes of inaccurate production lead time estimate and implement corrective actions linked to these root causes.

DOD RESPONSE: Concur. DLA has already identified several root causes for inaccurate lead times, including suppliers not accurately predicting lead time from subcontractors, suppliers including "buffers" in their projected production time, and

suppliers relying on past lead times for current purchase requests. DLA challenges the lead time quotes from vendors to ensure realistic Production Lead Time (PLT), and looks at required delivery dates on all contracts. As part of DLA's Supplier Relationship Management, PLT is one of the metrics measured, captured, and reported on a monthly basis. DLA conducts monthly reviews to identify suspected excessive PLTs and performs monthly updates to adjust the PLTs, as appropriate. DLA will continue its efforts to work with suppliers on improving estimates by utilizing the Supplier Requirements Visibility Application (SRVA) tool to give vendors access to forecast data that will allow sub-contractors to predict accurate lead times.

DLA also identifies items that have not been bought for a significant period of time that may have outdated lead times in the system, using SRVA and other collaboration methods to identify these out-of-production type items. On the supply planner side, DLA uses outlier reports to identify one-time occurrences and ensure they do not impact system lead times.

DLA has been able to achieve a 20% reduction in PLT overestimates since early 2009. These improvements are due to systemic changes in updating lead times of record.

RECOMMENDATION 3: The GAO recommends that the Secretary of Defense direct the Director, Defense Logistics Agency, to reinforce and reinvigorate effective internal controls aimed at evaluating and making adjustments to the Military Services' estimated additional requirements, including both supply support requests and special program requirements.

DOD RESPONSE: Concur. DLA will reinforce effective internal controls on additional requirements. In fact, the DLA has already enhanced internal controls for Special Program Requirements (SPRs). One example of these enhancements is the recently-initiated SPR validation effort with the Army to eliminate ongoing discrepancies/issues that were partly associated with Army using multiple systems to submit SPRs to DLA. A manual effort is underway to validate all Army SPRs as a result. These controls have identified and eliminated over $200M in Army SPR submissions. Additionally, DLA compares submitted SPRs with historical accuracy rates (by item) prior to making investment decisions.

DLA also makes forecast adjustments, based on intelligence received from the Service program offices, during the monthly Sales & Operations Planning (S&OP) process. S&OP provides an additional avenue to query Services on forecasts that do not materialize in actual demand, and DLA can use the responses to make trade-off decisions for funding future procurement actions.

RECOMMENDATION 4: The GAO recommends that the Secretary of Defense direct the Director, Defense Logistics Agency, to conduct a program evaluation of the demand

data exchange initiative to determine what, if any, additional actions should be taken to (1) improve communications and data exchange internally and with military customers and suppliers and (2) expand the initiative across the enterprise (for example, to other customers, items, and processes).

DOD RESPONSE: Concur. DLA has a program evaluation of its Demand Data Exchange (DDE) initiative currently underway, with completion set for February 2011. As part of its evaluation, DLA will review candidate items for collaboration partnerships with additional customers and suppliers. The evaluation will also look to continue improving forecast accuracy with its current collaboration customers. Based on feedback received from current DDE Service customers, DLA will roll out modified DDE business rule logic for all collaboration customers. The new business rules will be effective in May 2010.

Beginning in August 2010, DLA will host two Collaboration forums annually, one for Service customers participating in Demand Data Exchange (DDE) and one for suppliers. The intent of these forums is to obtain feedback, improve communication, and expand the use of both DDE and the Supplier Visibility Requirements Application (SRVA).

RECOMMENDATION 5: The GAO recommends that the Secretary of Defense direct the Director, Defense Logistics Agency, to evaluate the effectiveness of the agency's process for identifying and reducing potential over-procurements and determine the feasibility of applying the process on a wider scale.

DOD RESPONSE: Concur. DLA continues to make significant progress in reducing its over-procurements. In 2009, its Aviation supply chain initiated a Lean Six Sigma review of the entire over-procurement process. The initial findings from that review have already been adopted DLA-wide and have resulted in significant Purchase Request (PR) cancellations. Additional outcomes of this review will include evaluations of ways to improve/increase Purchase Order (PO) cancellations. By October 2010, DLA will complete a review and validation of items currently being excluded from the over-procurement process. DLA will ensure that any items it continues to exclude from the systemic over-procurement process will be subject to an off- line over-procurement review processes that allows for cancellation of PRs and POs exceeding requirements.

DLA has begun working to streamline the over-procurement process by eliminating the currently-required manual review of open purchase actions in a 100% over-procured position.

RECOMMENDATION 6: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with Director, Defense Logistics Agency, and the Secretaries of the Army,

the Navy, and the Air Force to formally evaluate and report the feasibility of requiring up-front Military Service funding for a portion of their supply support requests

DOD RESPONSE: Concur. The office of USD(AT&L) will evaluate and report the feasibility of requiring up-front funding of Supply Support Requests (SSRs) in conjunction with the office of the USD(Comptroller) and the Military Services.

Currently, DLA is pursuing a pilot effort with Navy/Marine Corps with the H-1 Helicopter, wherein DLA and the Services share the burden of investment risk. The concept of this initiative is to have Navy/Marine Corps pay half of the total SSR investment cost a lead time away from the recorded support date. DLA, in turn, will honor the total SSR requirement and buy both retail and wholesale quantities.

RECOMMENDATION 7: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with Director, Defense Logistics Agency, and the Secretaries of the Army, the Navy, and the Air Force to establish goals and metrics for tracking and assessing the cost efficiency of inventory management in accordance with DOD's policy requiring DLA and the Services to minimize investment in secondary item inventory while providing inventory needed; develop and implement an approach for integrating these goals and metrics with inventory management improvement efforts; and incorporate the goals and metrics into existing management and oversight processes.

DOD RESPONSE: Concur. The Department is undertaking a complete review of its inventory management practices, to include establishing goals and metrics for tracking inventory management improvement initiatives and cost efficiency. The office of USD(AT&L) is working closely with the Military Services and DLA to develop and publish a data-driven and actionable comprehensive inventory management improvement plan which will include goals, objectives, metrics, targets and a governance process for overseeing execution and refreshing the plan on a regular basis. The target for publication of the plan is Fourth Quarter FY2010.

RECOMMENDATION 8: The GAO recommends that the Secretary of Defense direct the Secretaries of the Army, the Navy, and the Air Force to certify to DLA which items and what quantities of the contingency reserve stock should be retained, in response to DLA's requests that they do so, and direct the Under Secretary of Defense for Acquisition, Technology and Logistics to provide guidance and oversight of this certification process.

DOD RESPONSE: Concur. The Military Services and DLA are collaboratively reviewing contingency retention inventory currently and the USD(AT&L) will review the results of that review once complete. The Department is also undertaking a complete review of its inventory management practices, to include an independent review of

contingency retention methodologies. This review is part of the comprehensive plan for improving inventory management practices due in Fourth Quarter FY2010. This independent review will highlight any changes in guidance necessary to improve the contingency retention process.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Jack Edwards, (202) 512-8246 or edwardsj@gao.gov

Staff Acknowledgments

In addition to the contact named above, Thomas Gosling, Assistant Director; Lionel Cooper; Qahira El'Amin; Foster Kerrison; Elke Kolodinski; Steve Pruitt; and Minette Richardson made key contributions to this report.

Related GAO Products

Military Base Realignments and Closures: DOD Needs to Update Savings Estimates and Continue to Address Challenges in Consolidating Supply-Related Functions at Depot Maintenance Locations. GAO-09-703. Washington, D.C.: July 9, 2009.

Defense Inventory: Army Needs to Evaluate Impact of Recent Actions to Improve Demand Forecasts for Spare Parts. GAO-09-199. Washington, D.C.: January 12, 2009.

Defense Inventory: Management Actions Needed to Improve the Cost Efficiency of the Navy's Spare Parts Inventory. GAO-09-103. Washington, D.C.: December 12, 2008.

Defense Inventory: Opportunities Exist to Save Billions by Reducing Air Force's Unneeded Spare Parts Inventory. GAO-07-232. Washington, D.C.: April 27, 2007.

Defense Inventory: Opportunities Exist to Improve the Management of DOD's Acquisition Lead Times for Spare Parts. GAO-07-281. Washington, D.C.: March 2, 2007.

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